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卓時檢測  
TIMEWAY TESTING LABORATORY



**ISO/IEC17025Accredited Lab.**

Report No:

FCC 0902016

File reference No:

2009-04-08

Applicant: Dongguan Tangxia USmart Electronic Products Limited

Product: Laptop Computer

Model No: LB-1017

Trademark: N/A

Test Standards: FCC Part 15 Subpart C, Paragraph 15.247& Part 15 Subpart B

Test result:

It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4, Part 15 Subpart B & FCC Part 15 Subpart C, Paragraph 15.247 regulations for the evaluation of electromagnetic compatibility

Approved By

Jack Chung

Jack Chung

Manager

Dated: April 08,2009

**Results appearing herein relate only to the sample tested**

**The technical reports is issued errors and omissions exempt and is subject to withdrawal at**

**SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO LTD**

5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District, Shenzhen,CHINA.

Tel (755) 83448688

Fax (755) 83442996



## **Special Statement:**

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

### **CNAL-LAB Code: L2292**

The EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of testing Laboratories.

### **FCC-Registration No.: 899988**

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 899988.

### **IC- Registration No.: IC5205A-01**

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration IC No.: 5205A-01.

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Test Report Conclusion

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## 1.0 General Details

### 1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO LTD  
Address: 5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District, Shenzhen,CHINA.  
Telephone: (755) 83448688  
Fax: (755) 83442996

Site on File with the Federal Communications Commission – United States

Registration Number: 899988

For 3m & 10 m OATS

Site Listed with Industry Canada of Ottawa, Canada

Registration Number: IC: 5205A-01

For 3m & 10 m OATS

### 1.2 Applicant Details

Applicant: Dongguan Tangxia USmart Electronic Products Limited  
Address: No.12,Lu Yi 2 Road, Tang Xia Town,Dongguan City,Guang Dong Prov.,China  
Telephone: +86-769-87911890  
Fax: +86-769-87915263

### 1.3 Description of EUT

Product:	Laptop Computer
Manufacturer:	Dongguan Tangxia USmart Electronic Products Limited
Brand Name:	N/A
Model Number:	LB-1017
Additional Model Name	LB-1017XX,(XXIndicate the different shell colors and with different clients)
Additional Trade Name	N/A
Rating:	Input: DC 19V,57W
Power Supply:	Model: ADP193-32 (Made by Huntkey) , Input: 100-240V~, 1.5A, 50/60Hz; Output: DC19V, 3.42AMax Alternative Model: YJS05-1903000D (Made by SWITCHING), Input: 100-240V, 1.5A Max, 47-63Hz      Output: 19V, 3A
Type of Modulation	DBPSK、DQPSK、CCK、OFDM
Frequency range	2412-2462MHz
Number of Channel	11
Air Data Rate	54、48、36、24、18、12、9、6Mbps at 802.11g mode; 11、5.5、2、1Mbps at 802.11b mode
Frequency Selection	By software

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1.4 Submitted Sample

1 Sample

1.5 Test Duration

2009-02-23 to 2009-03-18

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions Uncertainty =4.7dB

1.7 Test Engineer

*Terry Tang*

The sample tested by \_\_\_\_\_

Print Name: Terry Tang

Test Equipments					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	ROHDE&SCHWARZ	ESPI 3	100379	2008-12-05	2009-12-04
Absorbing Clamp	ROHDE&SCHWARZ	MDS-21	100126	2008-12-05	2009-12-04
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100294	2008-12-05	2009-12-04
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100253	2008-12-05	2009-12-04
Ultra Broadband ANT	ROHDE&SCHWARZ	HL562	100157	2008-12-05	2009-12-04
ESDV Test Receiver	ROHDE&SCHWARZ	ESDV	100008	2008-03-30	2009-03-29
4-WIRE ISN	ROHDE&SCHWARZ	ENY 41	830663/044	2008-02-18	2010-02-17
GG ENY22 Double 2-Wire ISN	ROHDE&SCHWARZ	ENY22	83066/016	2009-02-18	2010-02-17
Impuls-Begrenzer	ROHDE&SCHWARZ	ESH3-Z2	100281	2009-02-18	2010-02-17
System Controller	CT	SC100	-	2009-02-18	2010-02-17
Printer	EPSON	PHOTO EX3	CFNH234850	2009-02-18	2010-02-17
FM-AM Signal Generator	JUNGJIN	SG-150M	389911177	2009-02-18	2010-02-17

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Color TV Pattern Generator	PHILIPS	PM5418	LO621747	2009-02-18	2010-02-17
Computer	IBM	8434	1S8434KCE99BLX LO*	-	-
Oscillator	KENWOOD	AG-203D	3070002	2009-02-18	2010-02-17
Power meter	Anritsu	ML2487A	6K00003613	2009-02-18	2010-02-17
Power sensor	Anritsu	MA2491A	32263	2009-02-8	2010-02-17
Spectrum Analyzer	HAMEG	HM5012	-	-	-
Power Supply	LW	APS1502	-	-	-
5K VA AC Power Source	California Instruments	5001iX	56060	2009-02-18	2010-02-17
CDN	EM TEST	CDN M2/M3	-	2009-02-18	2010-02-17
Attenuation	EM TEST	ATT6/75	-	2009-02-18	2010-02-17
Resistance	EM TEST	R100	-	2009-02-18	2010-02-17
Electromagnetic Injection Clamp	LITTHI	EM101	35708	2009-02-18	2010-02-17
Signal Generator	ROHDE&SCHWARZ	SMT03	100029	2009-02-18	2010-02-17
Power Amplifier	AR	150W1000	300999	2009-02-18	2010-02-17
Field probe	Holaday	HI-6005	105152	2009-02-18	2010-02-17
Bilog Antenna	Chase	CBL6111C	2576	2009-02-18	2010-02-17
ESPI Test Receiver	ROHDE&SCHWARZ	ESI26	838786/013	2009-02-18	2010-02-17
3m OATS	--	--	N/A	2009-02-18	2010-02-17
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170265	2008-08-16	2009-08-15
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-631	2008-07-03	2009-07-02

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### 3.0 Technical Details

#### 3.1 Summary of test results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.107 & 15.207	Conducted Emission Test	PASS	Complies
FCC Part 15 Subpart C Paragraph 15.247(a)(2) Limit	Spectrum bandwidth of a Orthogonal Frequency Division Multiplex System Limit: 6dB bandwidth>500kHz	PASS	Complies
FCC Part 15, Paragraph 15.247(b)	Maximum peak output power Limit: max. 30dBm	PASS	Complies
FCC Part 15, Paragraph 15.109,15.205 & 15.209	Transmitter Radiated Emission Limit: Table 15.209	PASS	Complies
FCC Part 15, Paragraph 15.247(d)	Power Spectral Density Limit: max. 8dBm	PASS	Complies
FCC Part 15, Paragraph 15.247(c)	Out of Band Emission and Restricted Band Radiation Limit: 20dB less than peak value of fundamental frequency Restricted band limit: Table 15.209	PASS	Complies

#### 3.2 Test Standards

FCC Part 15 Subpart & Subpart C, Paragraph 15.247

### 4.0 EUT Modification

No modification by Shenzhen Timeway Technology Consulting Co., Ltd

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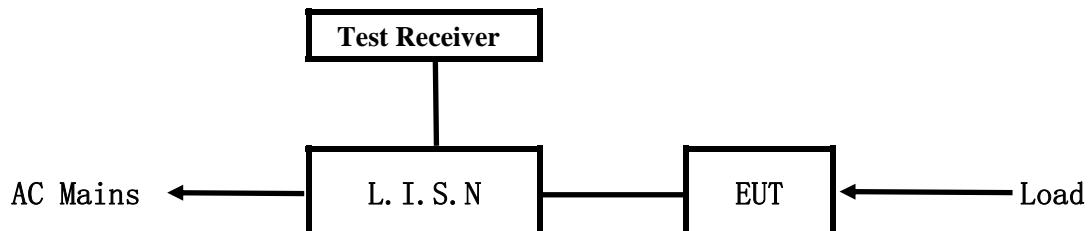
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## 5. Power Line Conducted Emission Test

### 5.1 Schematics of the test

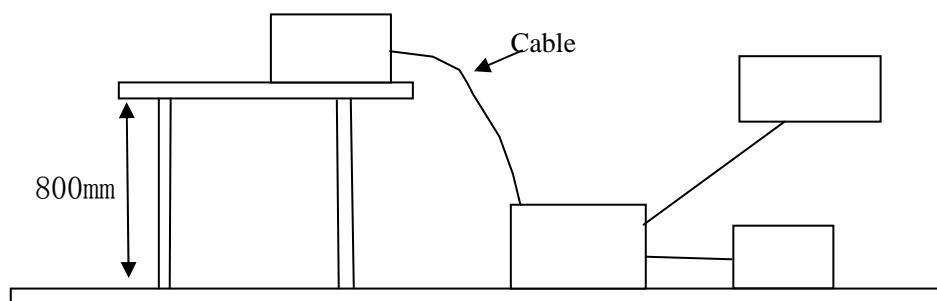


EUT: Equipment Under Test

### 5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2003. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4 –2003.

### Block diagram of Test setup



### 5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2003. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

Two channels are provided to the EUT

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437	--	--

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A. EUT

Device	Manufacturer	Model	FCC ID
Notebook	Dongguan Tangxia Usmart Electronic Products Limited	LB-1017	W7TUS

B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC	Cable
N/A				

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4 -2003.

- A Setup the EUT and simulators as shown on follow  
B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207 and 15.107

Frequency (MHz)	Class A Limits (dB $\mu$ V)		Class B Limits (dB $\mu$ V)	
	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level
0.15 ~ 0.50	79.0	66.0	66.0~56.0*	56.0~46.0*
0.50 ~ 5.00	73.0	60.0	56.0	46.0
5.00 ~ 30.00	73.0	60.0	60.0	50.0

Notes: 1. \*Decreasing linearly with logarithm of frequency.

2. The tighter limit shall apply at the transition frequencies

3. Test Voltage: 120V~, 60Hz

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

Note: the worse cases was selected to conducted the test

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### A Conducted Emission on Line Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Read USB,SD card and software, Running EMC test software and Ping wireless network

Adaptor used for test Model No.: ADP193-32

**Results:** Pass

Please refer to following diagram for individual



Frequency (MHz)	Reading(dB $\mu$ V)				Limit (dB $\mu$ V)	
	Line		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.4194	54.69	34.99	--	--	57.46	47.46
0.4761	39.55	24.85	--	--	56.41	46.41
0.5410	45.01	30.31	--	--	56.00	46.00
0.6290	41.61	27.41	--	--	56.00	46.00
0.7495	40.53	23.93	--	--	56.00	46.00
0.9750	40.37	28.27	--	--	56.00	46.00

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## B Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Read USB,SD card and software, Running EMC test software and Ping wireless network

Adaptor used for test Model No.: ADP193-32

**Results:** Pass

Please refer to following diagram for individual

File :LB-1017 Data :#5 Date: 09/02/26/ Time: 15:22:38



Frequency (MHz)	Reading(dB μ V)				Limit (dB μ V)	
	Live		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.4790	--	--	40.05	24.35	56.36	46.36
0.5130	--	--	42.88	27.08	56.00	46.00
0.5321	--	--	44.60	28.20	56.00	46.00
0.6163	--	--	41.49	25.99	56.00	46.00
0.7466	--	--	40.33	24.03	56.00	46.00
0.9996	--	--	25.70	23.30	56.00	46.00

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### C Conducted Emission on Line Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Running notebook test program and Ping network

Adaptor used for test Model No.: ADP193-32

**Results:** Pass

Please refer to following diagram for individual



Frequency (MHz)	Reading(dB $\mu$ V)				Limit (dB $\mu$ V)	
	Line		Neutral		Quasi-peak	Average
	Quasi-peak	Average	Quasi-peak	Average		
0.4780	50.25	24.85	--	--	56.37	46.37
0.5342	44.91	28.61	--	--	56.00	46.00
0.6673	40.25	22.75	--	--	56.00	46.00
0.7696	41.76	28.66	--	--	56.00	46.00
0.8441	41.53	28.33	--	--	56.00	46.00
0.8387	41.33	28.93	--	--	56.00	46.00

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#### D Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Running notebook test program and Ping network

Adaptor used for test Model No.: ADP193-32

**Results:** Pass

Please refer to following diagram for individual

File :LB-1017

Data :#8

Date: 09/02/26/

Time: 15/52/49

80.0 dB $\mu$ V

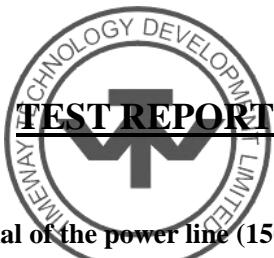


Frequency (MHz)	Reading(dB $\mu$ V)				Limit (dB $\mu$ V)	
	Live		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.4874	--	--	40.36	29.06	56.21	46.21
0.5395	--	--	45.11	29.91	56.00	46.00
0.6811	--	--	39.86	23.26	56.00	46.00
0.7564	--	--	40.94	24.44	56.00	46.00
0.8805	--	--	39.47	22.87	56.00	46.00
1.0353	--	--	40.41	26.81	56.00	46.00

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**Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)**

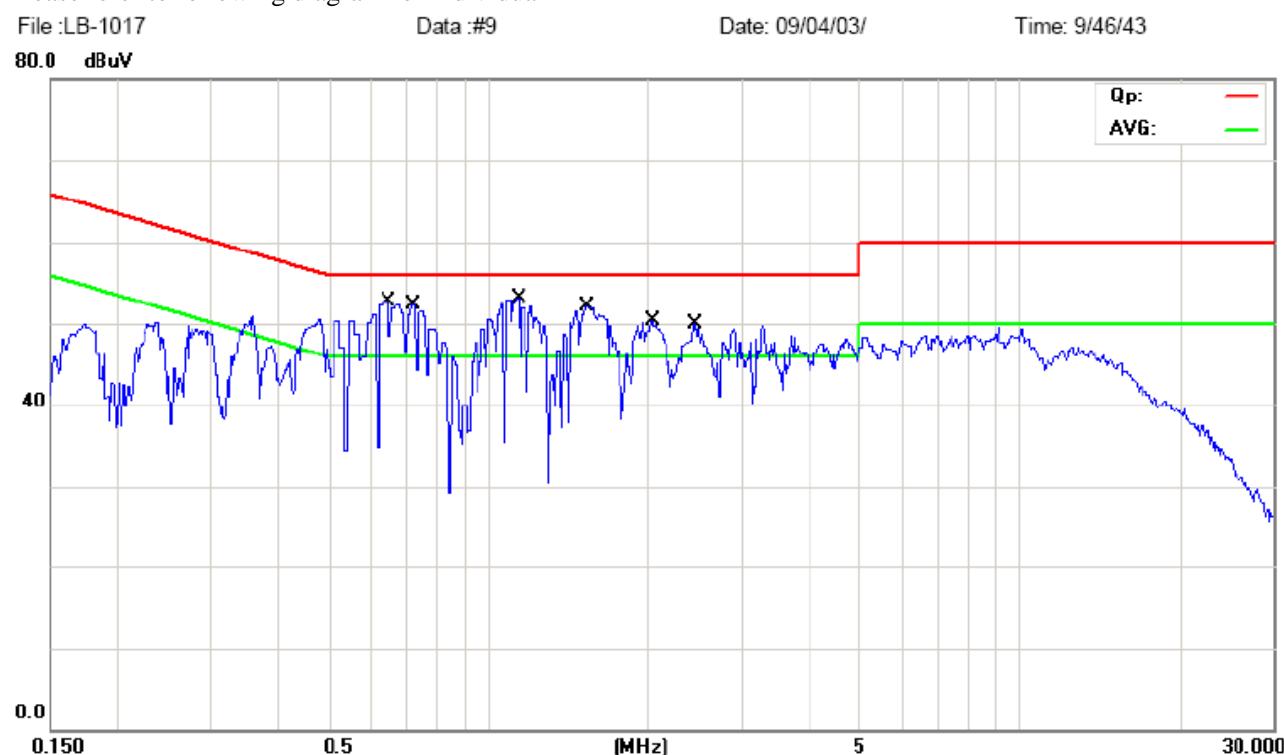
EUT set Condition: Read USB,SD card and software, Running EMC test software and Ping wireless network

Adaptor used for test Model No.: YJS05-1903000D

Working Voltage: 120V~ 60Hz

**Results:** **Pass**

Please refer to following diagram for individual



Frequency (MHz)	Reading(dB $\mu$ V)				Limit (dB $\mu$ V)	
	Live		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.6448	--	--	42.82	37.42	56.00	46.00
0.7200	--	--	48.90	34.60	56.00	46.00
1.1325	--	--	52.35	30.65	56.00	46.00
1.5471	--	--	50.12	33.12	56.00	46.00
2.0232	--	--	48.21	33.51	56.00	46.00
2.4403	--	--	47.18	33.78	56.00	46.00

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**Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)**

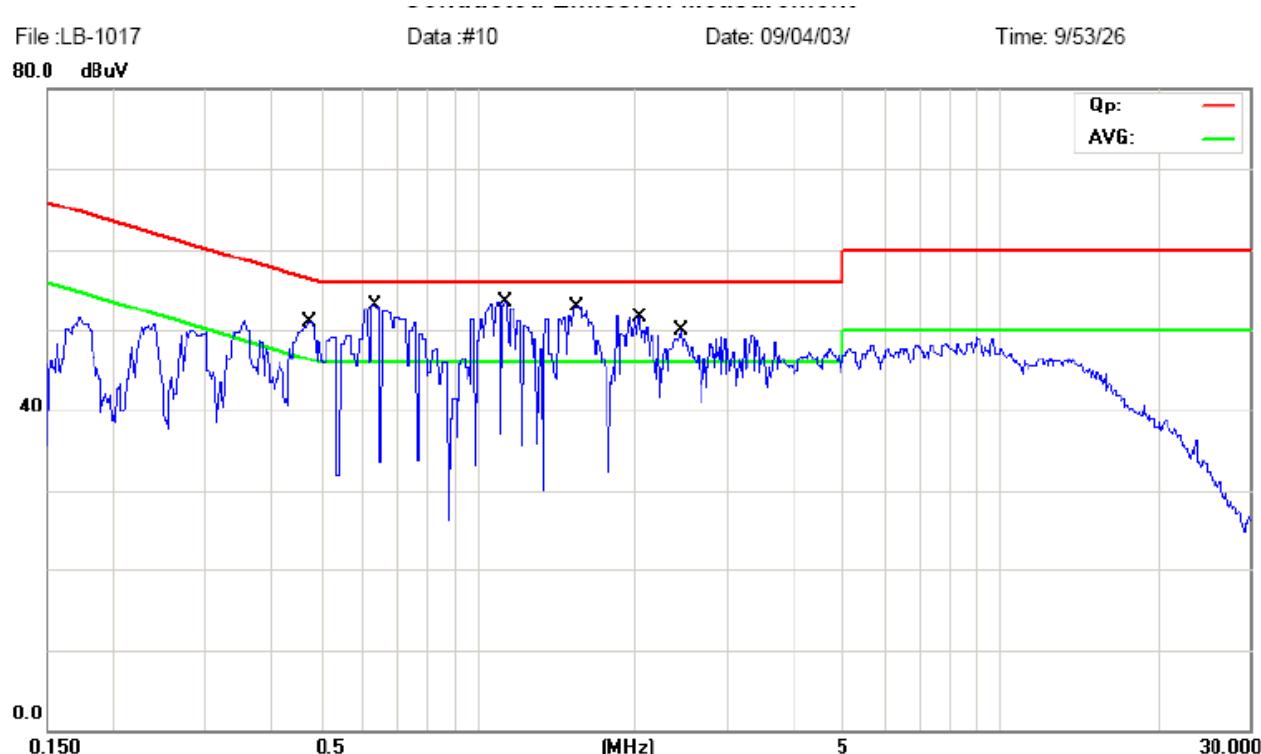
EUT set Condition: Read USB,SD card and software, Running EMC test software and Ping wireless network

Adaptor used for test Model No.: YJS05-1903000D

Working Voltage: 120V~ 60Hz

**Results:** **Pass**

Please refer to following diagram for individual



Frequency (MHz)	Reading(dB $\mu$ V)				Limit (dB $\mu$ V)	
	Live		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.4698	49.44	36.04	--	--	56.52	46.52
0.6400	50.29	33.32	--	--	56.00	46.00
1.1257	51.85	35.75	--	--	56.00	46.00
1.5496	51.92	32.42	--	--	56.00	46.00
2.0270	49.01	33.21	--	--	56.00	46.00
2.4448	47.78	28.38	--	--	56.00	46.00

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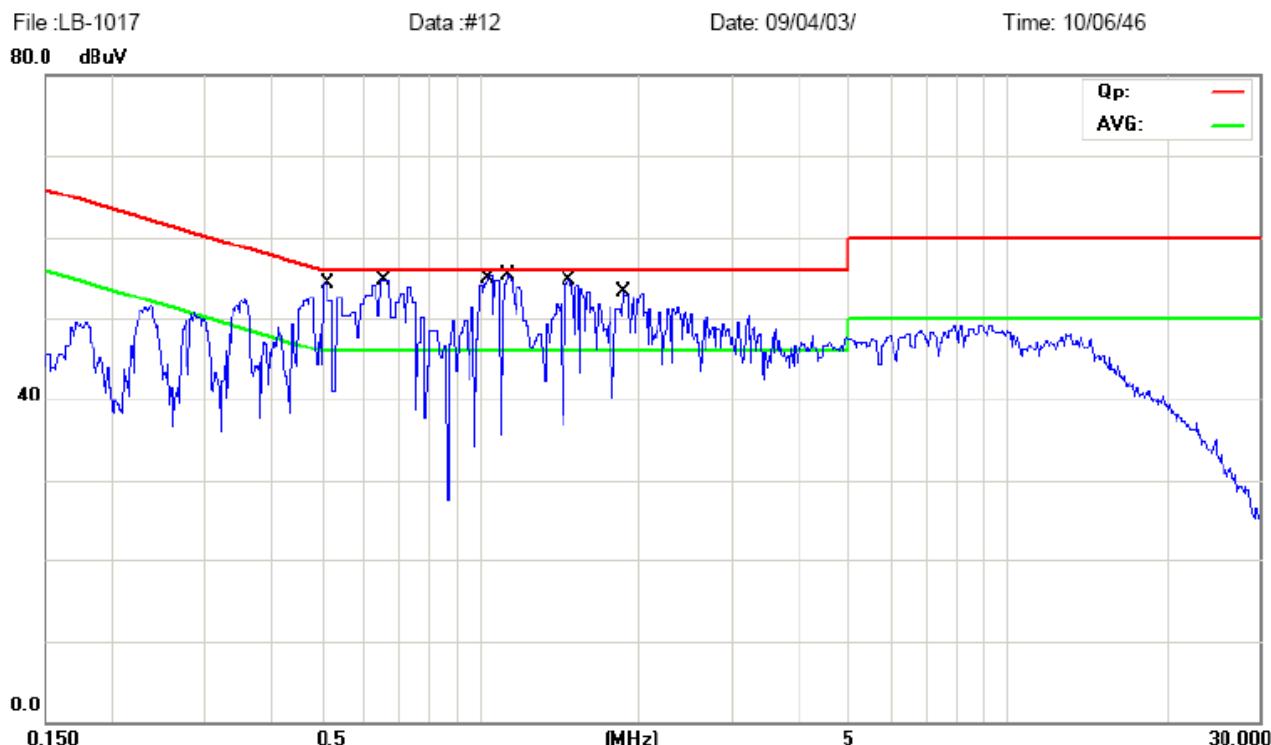
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EUT set Condition: Running notebook test program and Ping network  
Adaptor used for test Model No.: YJS05-1903000D  
Working Voltage: 120V~ 60Hz  
**Results:** Pass

Please refer to following diagram for individual



Frequency (MHz)	Reading(dB $\mu$ V)				Limit (dB $\mu$ V)	
	Live		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.5160	--	--	50.79	33.59	56.00	46.00
0.6503	--	--	54.23	34.03	56.00	46.00
1.0261	--	--	53.11	40.81	56.00	46.00
1.1278	--	--	53.05	31.95	56.00	46.00
1.4842	--	--	51.19	31.09	56.00	46.00
1.8920	--	--	48.16	28.26	56.00	46.00

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**Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)**

EUT set Condition: Running notebook test program and Ping network

Adaptor used for test Model No.: YJS05-1903000D

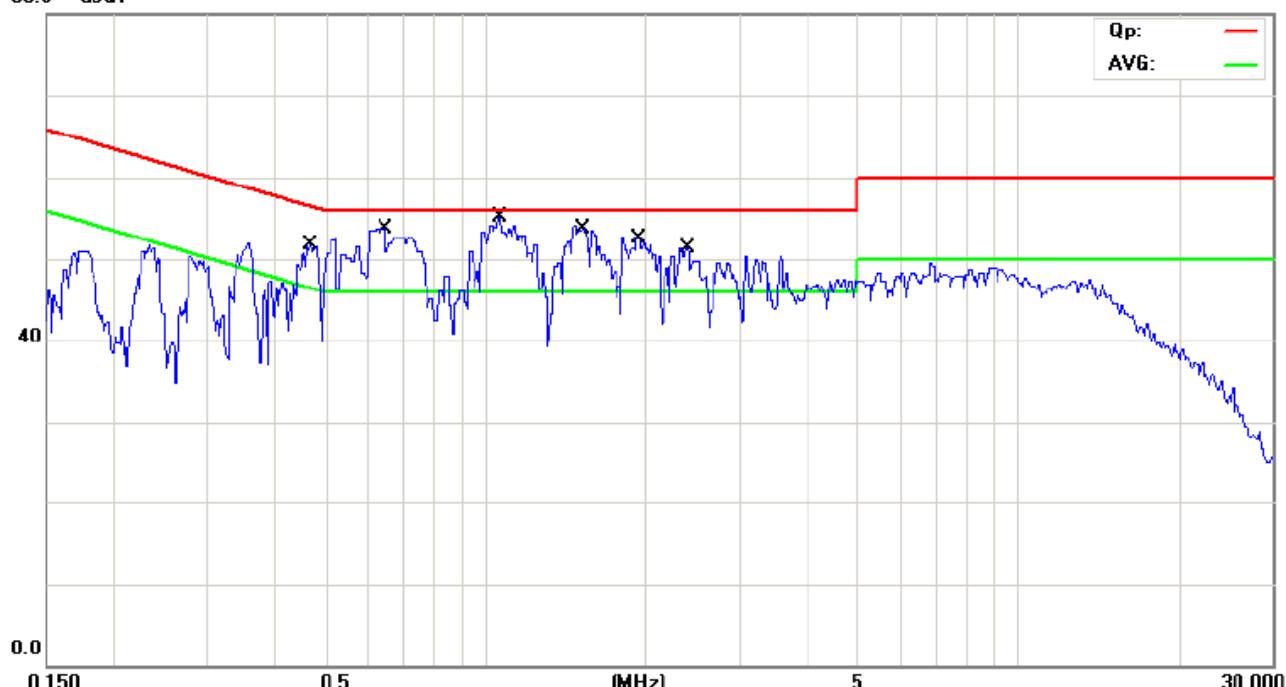
Working Voltage: 120V~ 60Hz

**Results:** Pass

Please refer to following diagram for individual

File :LB-1017 Data :#11 Date: 09/04/03/ Time: 10/01/22

80.0 dB $\mu$ V



Frequency (MHz)	Reading(dB $\mu$ V)				Limit (dB $\mu$ V)	
	Live		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.6385	52.52	41.02	--	--	56.00	46.00
1.0616	53.02	41.22	--	--	56.00	46.00
1.5251	53.31	35.01	--	--	56.00	46.00
1.9421	51.58	38.58	--	--	56.00	46.00
2.3706	49.55	39.84	--	--	56.00	46.00
0.4733	51.84	33.34	--	--	56.00	46.00

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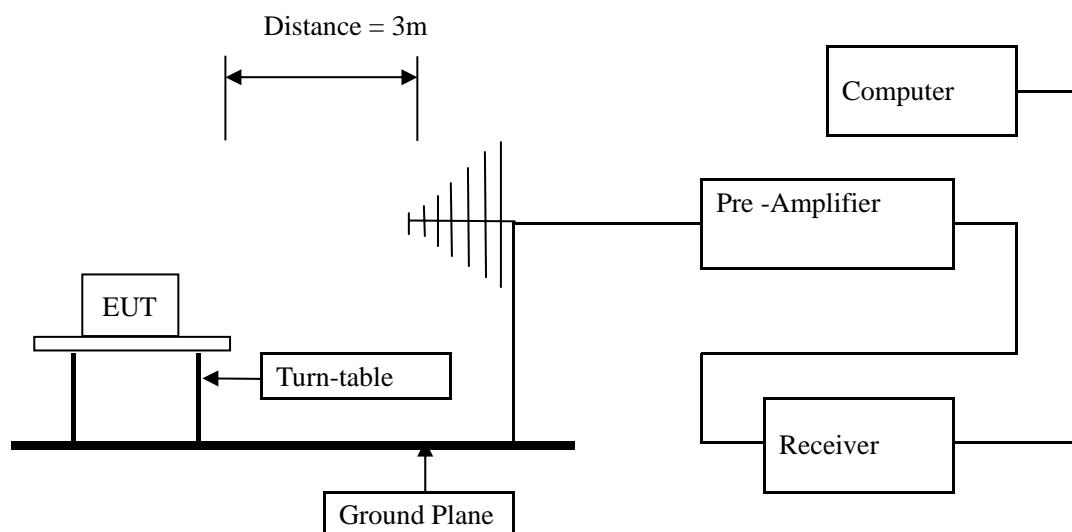


## 6 Radiated Emission Test

### 6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.4 -2003. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.899988
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-2003.
- (3) The frequency spectrum from 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector. Measurements were made at 3 meters.
- (4) The antenna height is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
- (6) The antenna polarization : Vertical polarization and Horizontal polarization.

### Block diagram of Test setup



### 6.2 Configuration of The EUT

Same as section 5.3 of this report

### 6.3 EUT Operating Condition

Same as section 5.4 of this report.

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6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

**Frequencies in restricted band are complied to limit on Paragraph 15.209 and 15.109**

Frequency Range (MHz)	Distance (m)	Field strength (dB $\mu$ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

- Note:
1. RF Voltage (dB $\mu$ V) =  $20 \log_{10}$  RF Voltage ( $\mu$ V)
  2. In the Above Table, the higher limit applies at the band edges.
  3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
  4. Test Voltage: 120V~, 60Hz

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**Test result**

**General Radiated Emission Data and Harmonics Radiated Emission Data**

**Radiated Emission In Horizontal (30MHz----1000MHz)**

EUT set Condition: Read USB,SD card and software, Running EMC test software and Ping wireless network

Adaptor used for test Model No.: ADP193-32

**Results:** **Pass**

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
172.88	32.41	H	43.50
912.00	39.03	H	46.00
977.16	39.10	H	46.00
130.00	30.78	V	43.50
651.23	40.02	V	46.00
977.15	40.60	V	46.00

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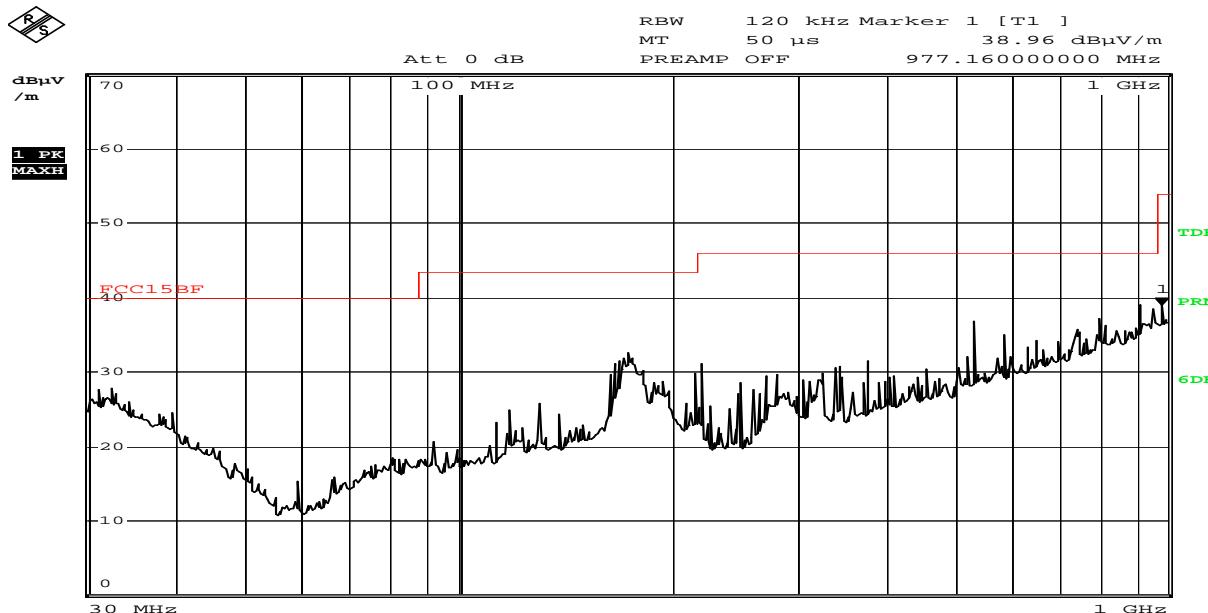
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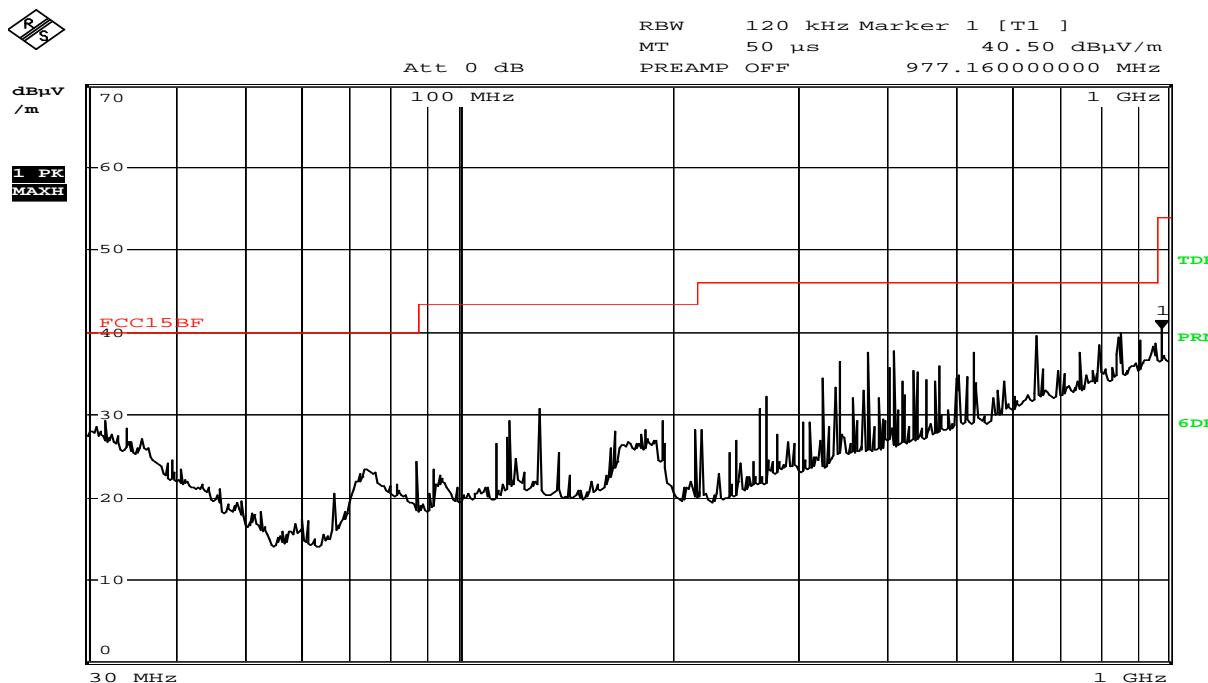
Test Figure:

Horizontal



Comment: 12v 7AH -V charging  
Date: 26.FEB.2009 10:26:42

Vertical



Comment: 12v 7AH -V charging  
Date: 26.FEB.2009 10:25:45

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**EUT set Condition:** Running notebook test program and Ping network  
**Adaptor used for test** Model No.: ADP193-32  
**Results:** **Pass**

Frequency (MHz)	Level@3m (dB $\mu$ V/m)	Antenna Polarity	Limit@3m (dB $\mu$ V/m)
173.10	33.74	H	43.50
531.88	37.67	H	46.00
798.04	39.51	H	46.00
117.62	31.43	V	43.50
532.02	38.76	V	43.50
173.10	42.12	V	46.00

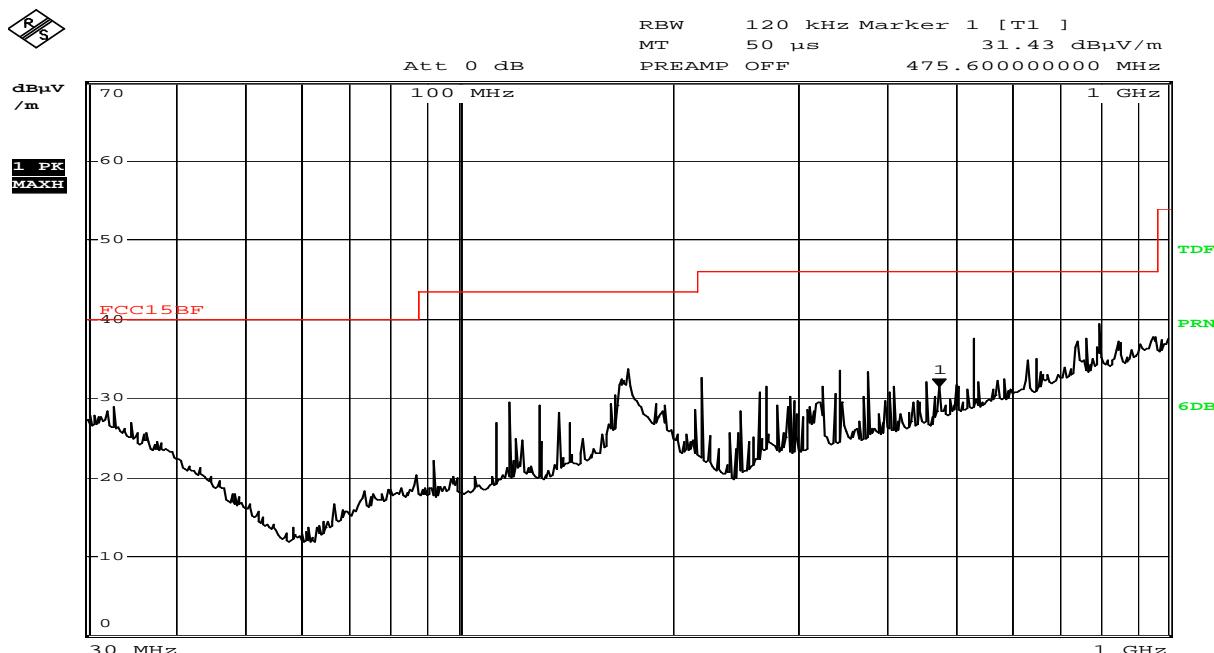
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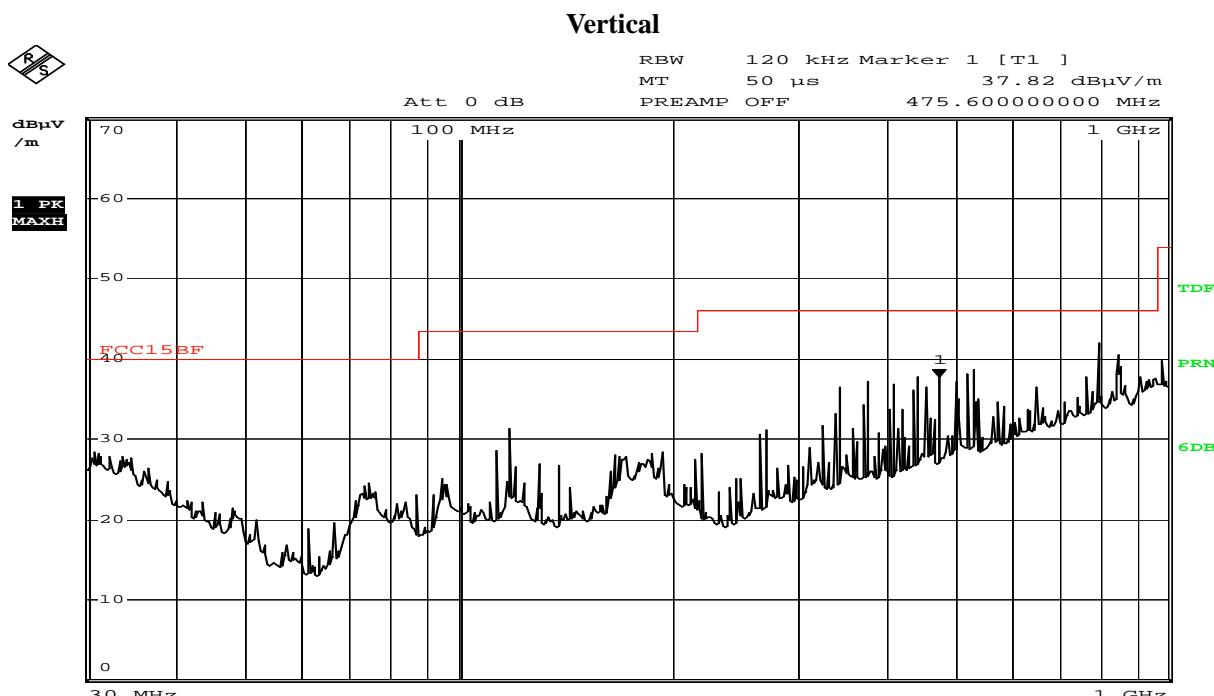
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Test Figure:



Comment: 12v 7AH -V charging  
Date: 26.FEB.2009 10:14:56



Comment: 12v 7AH -V charging  
Date: 26.FEB.2009 10:16:42

Note:.. Emission level (dB $\mu$ V/m) =Antenna Factor (dB/m) + Cable loss (dB) + Meter Reading (dB $\mu$ V).

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**Test result**

**General Radiated Emission Data and Harmonics Radiated Emission Data**

**Radiated Emission In Horizontal (30MHz----1000MHz)**

EUT set Condition: Read USB,SD card and software, Running EMC test software and Ping wireless network

Adaptor used for test Model No.: YJS05-1903000D

Working Voltage: 120V~ 60Hz

**Results:** **PASS**

Frequency (MHz)	Level@3m (dB $\mu$ V/m)	Antenna Polarity	Limit@3m (dB $\mu$ V/m)
531.96	44.4	H	46.00
912.04	42.8	H	46.00
36.08	36.8	V	40.00
432.24	39.8	V	46.00
532.00	41.3	V	46.00

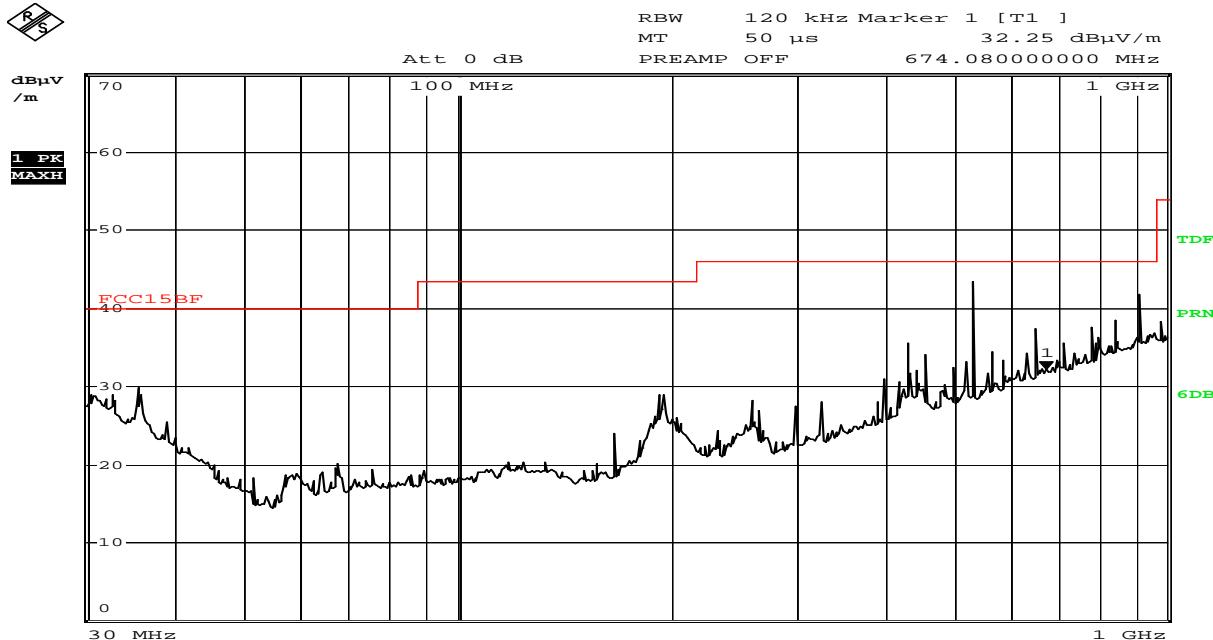
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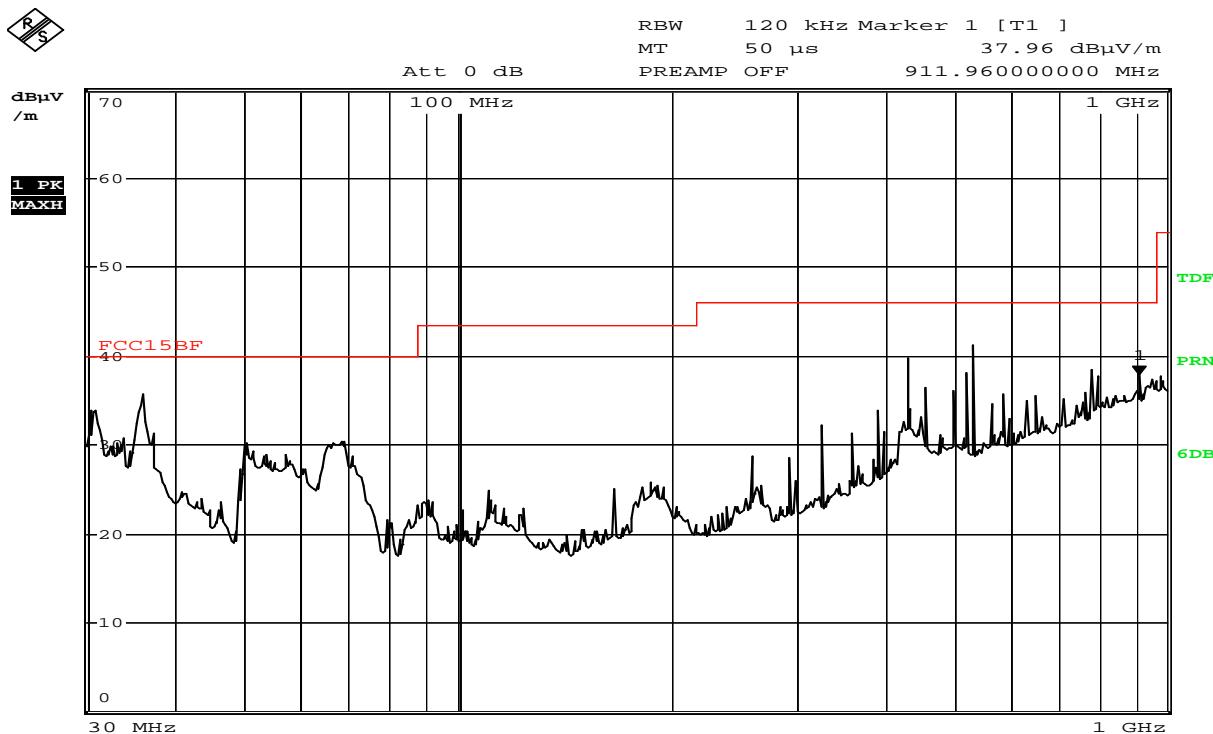


Horizontal



Date: 3.APR.2009 10:43:40

Vertical



Date: 3.APR.2009 10:46:42

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**Test result**

**General Radiated Emission Data and Harmonics Radiated Emission Data**

**Radiated Emission In Horizontal (30MHz----1000MHz)**

EUT set Condition: Running notebook test program and Ping network

Adaptor used for test Model No.: YJS05-1903000D

Working Voltage: 120V~ 60Hz

**Results:** **PASS**

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
532.00	45.1	H	46.00
651.44	42.2	H	46.00
912.00	40.6	H	46.00
35.52	37.6	V	40.00
432.20	42.8	V	46.00
532.00	44.6	V	46.00
781.72	41.4	V	46.00

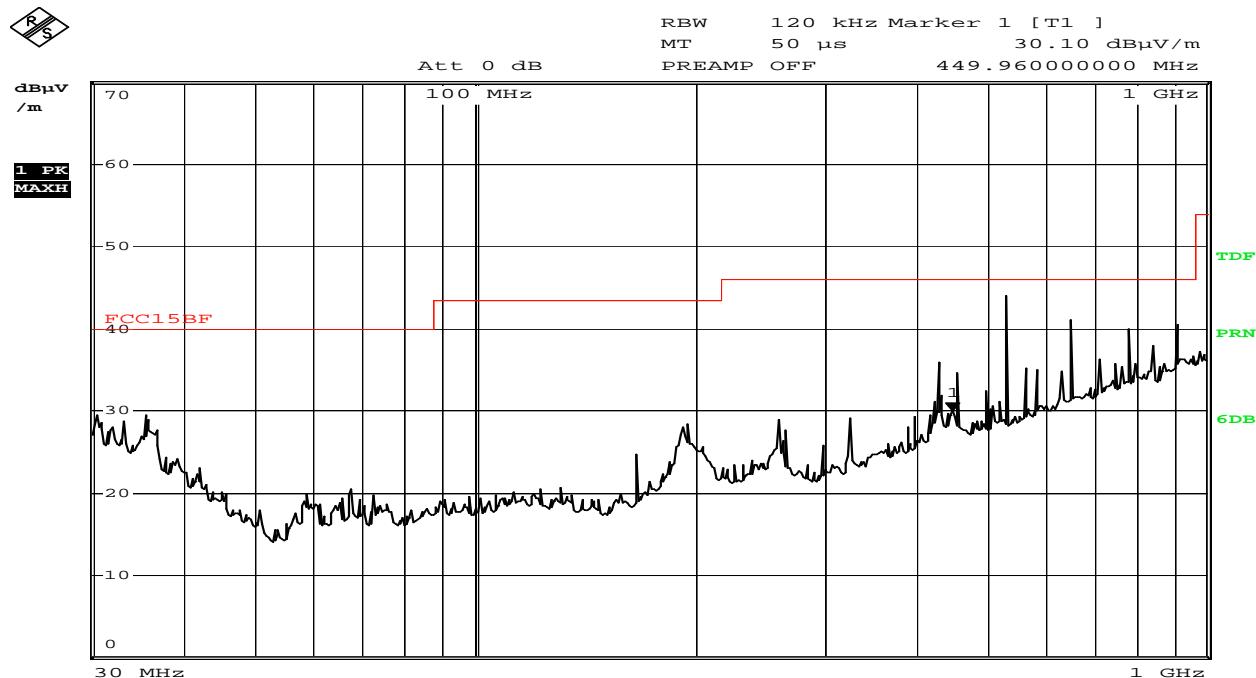
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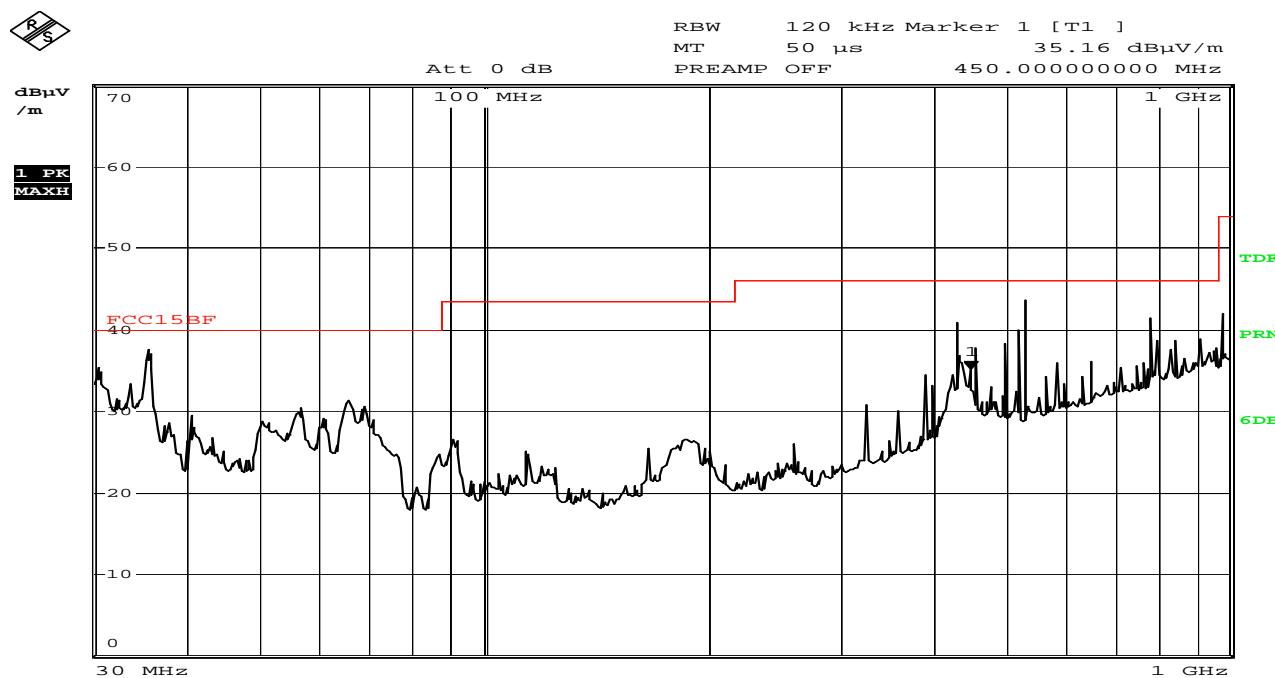


Horizontal



Date: 3.APR.2009 10:40:46

Vertical



Date: 3.APR.2009 10:38:49

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**Operation Mode: Transmitting & Receiving under CH01 at 6Mbps**

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
2412.00	102.8(PK) /90.2 (AV)	V	Fundamental Frequency
2412.00	97.2(PK) /85.2 (AV)	H	
4824.00	--	H/V	74(Peak)/ 54(AV)
7236.00	--	H/V	74(Peak)/ 54(AV)
9648.00	--	H/V	74(Peak)/ 54(AV)
12060	--	H/V	74(Peak)/ 54(AV)
14472	--	H/V	74(Peak)/ 54(AV)
16684	--	H/V	74(Peak)/ 54(AV)
19296	--	H/V	74(Peak)/ 54(AV)
21708	--	H/V	74(Peak)/ 54(AV)
24120	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark “--” means that the emissions level is too low to be measured

3. For 802.11g mode 6Mbps

4. Test results are for the worst case condition

**Operation Mode: Transmitting & Receiving under CH06 at 6Mbps**

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
2437.00	101.2(PK) /88.6 (AV)	V	Fundamental Frequency
2437.00	96.5(PK) /84.0 (AV)	H	
4874.00	--	H/V	74(Peak)/ 54(AV)
7311.00	--	H/V	74(Peak)/ 54(AV)
9748.00	--	H/V	74(Peak)/ 54(AV)
12185	--	H/V	74(Peak)/ 54(AV)
14622	--	H/V	74(Peak)/ 54(AV)
17059	--	H/V	74(Peak)/ 54(AV)
19496	--	H/V	74(Peak)/ 54(AV)
21933	--	H/V	74(Peak)/ 54(AV)
24370	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark “--” means that the emissions level is too low to be measured

3. For 802.11g mode 6Mbps

4. Test results are for the worst case condition

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**Operation Mode: Transmitting & Receiving under CH11 at 6Mbps**

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
2462.00	100.3(PK) /87.5 (AV)	V	Fundamental Frequency
2462.00	95.6(PK) /84.6 (AV)	H	
4824	--	H/V	74(Peak)/ 54(AV)
7368	--	H/V	74(Peak)/ 54(AV)
9848	--	H/V	74(Peak)/ 54(AV)
12310	--	H/V	74(Peak)/ 54(AV)
14772	--	H/V	74(Peak)/ 54(AV)
17234	--	H/V	74(Peak)/ 54(AV)
19696	--	H/V	74(Peak)/ 54(AV)
22158	--	H/V	74(Peak)/ 54(AV)
24650	--	H/V	74(Peak)/ 54(AV)

- Note: 1. Level = Reading + AF + Cable - Preamplifier + Filter - Distance, Margin = Level - Limit  
2. Remark “--” means that the emissions level is too low to be measured  
3. For 802.11g mode at 6Mbps  
4. Test results are for the worst case condition

The report refers only to the sample tested and does not apply to the bulk.

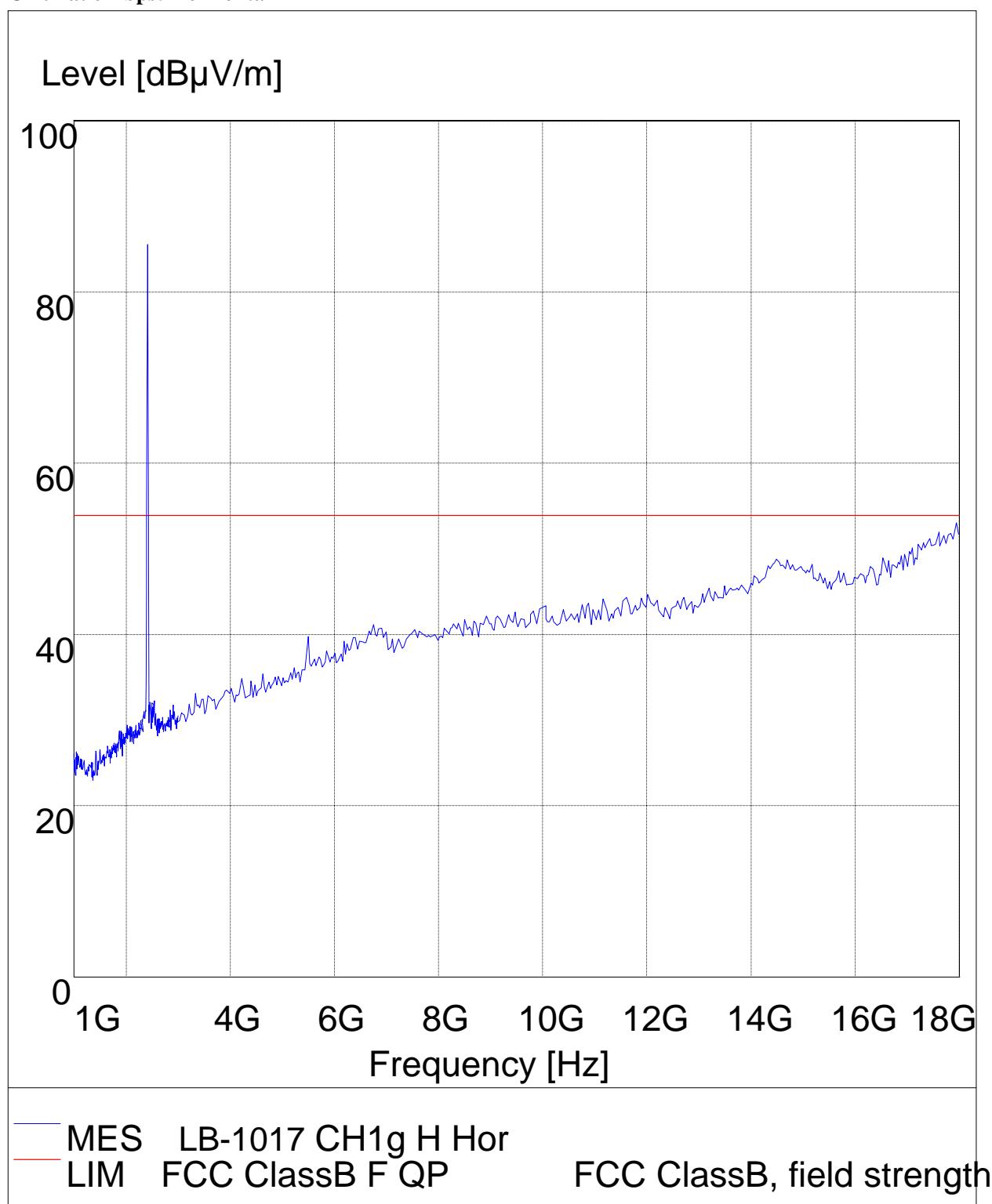
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Please refer to the following test plots for details:

**CH01 at 6Mbps: Horizontal**



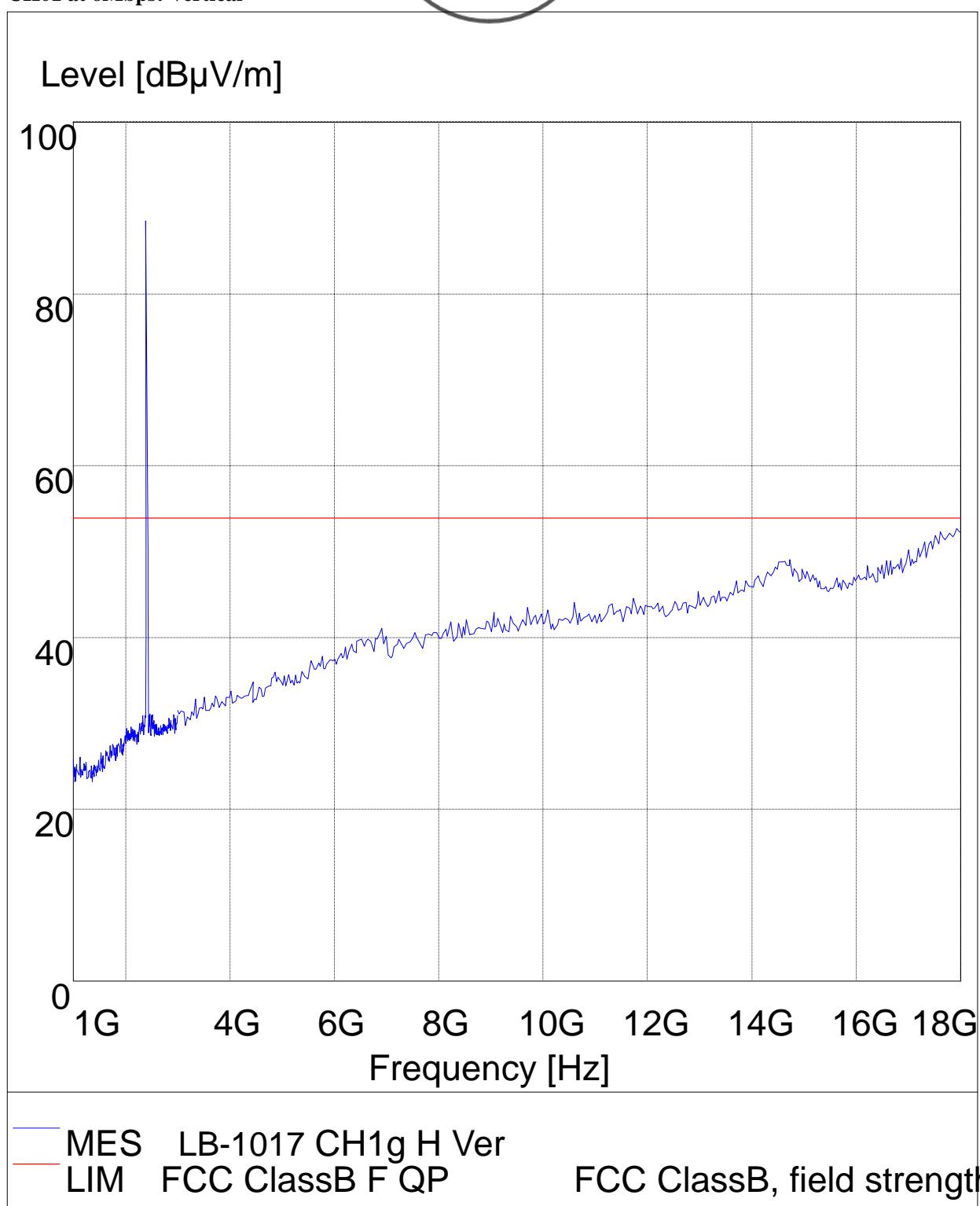
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CH01 at 6Mbps: Vertical



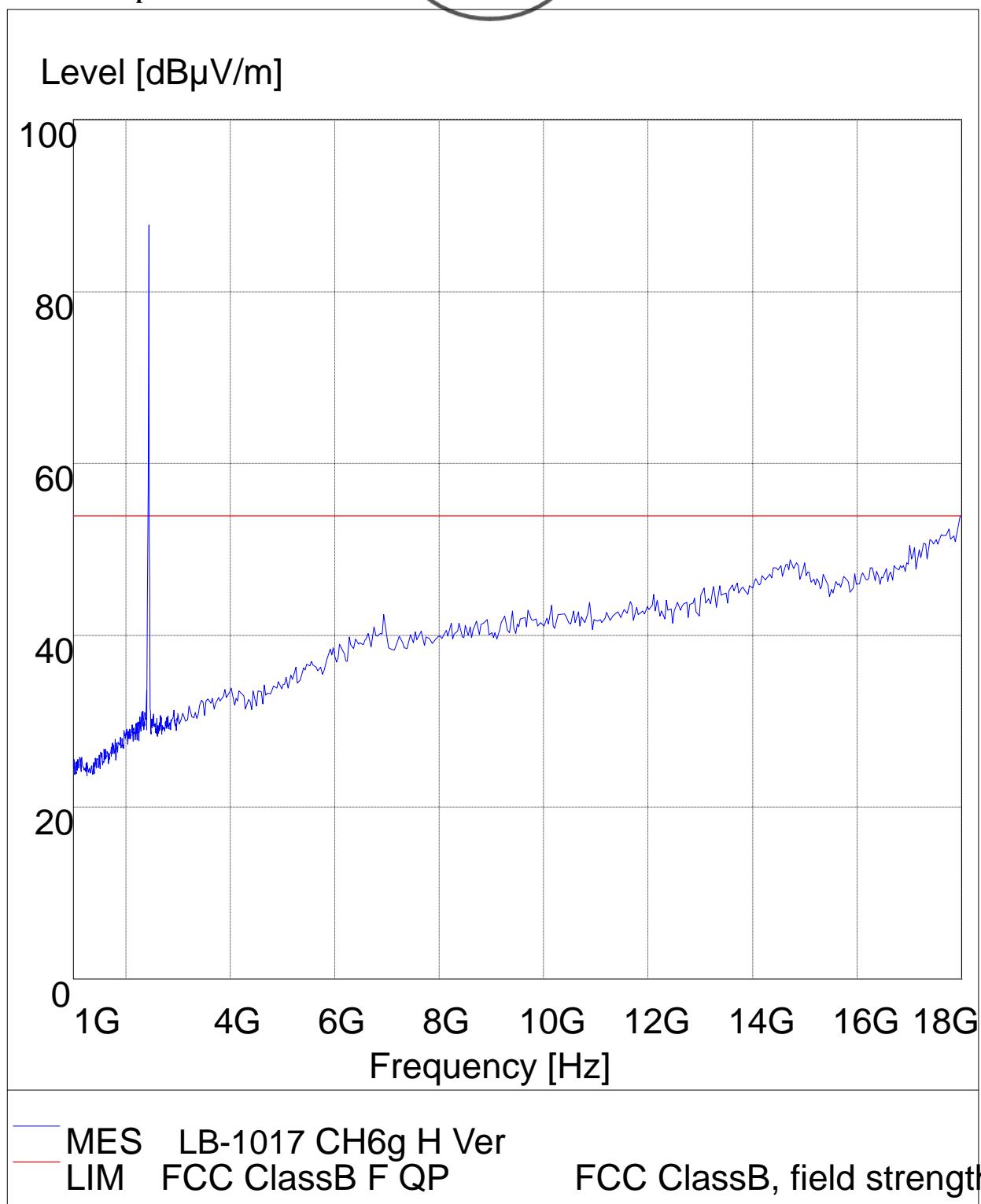
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CH06 at 6Mbps: Vertical



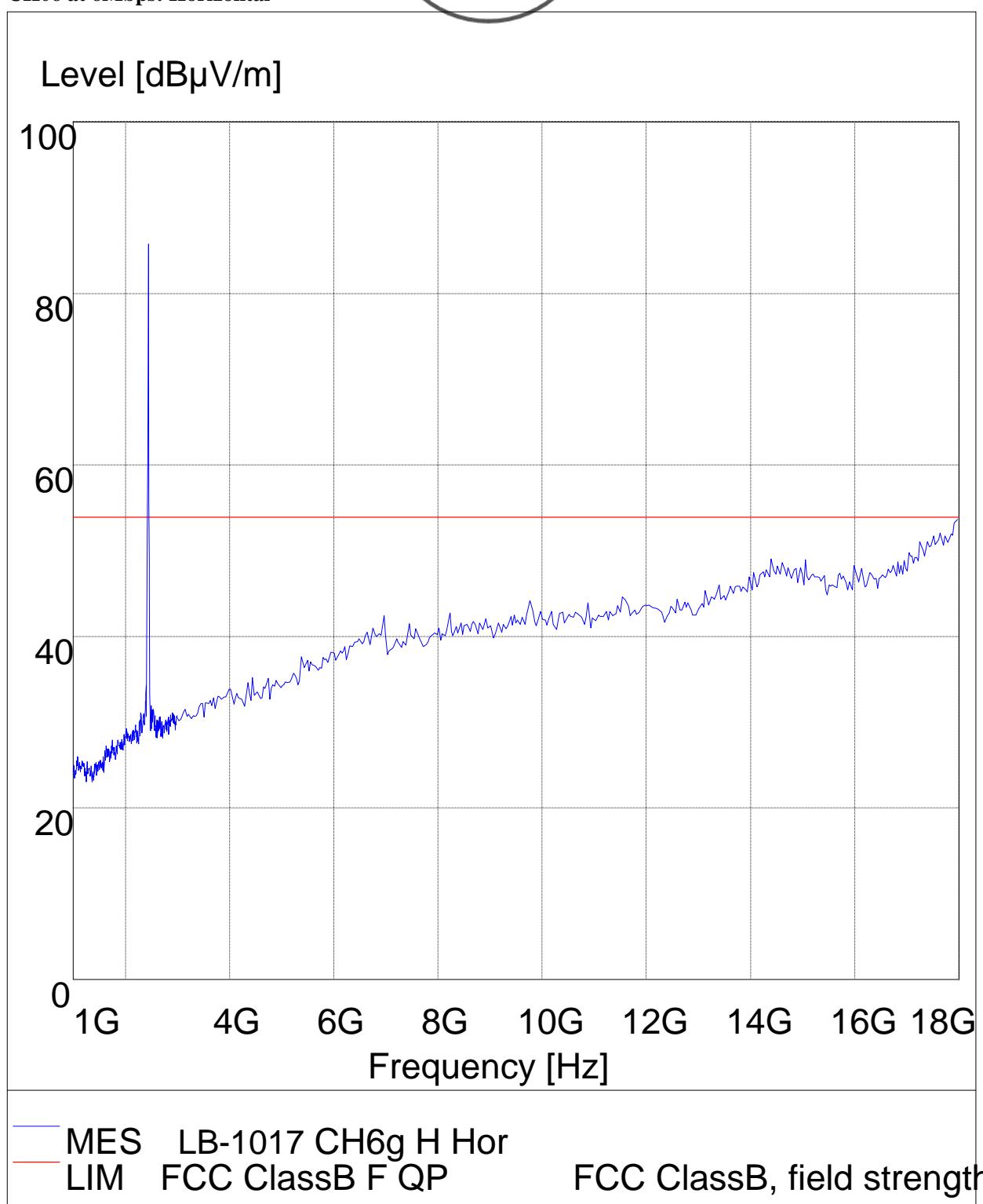
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CH06 at 6Mbps: Horizontal



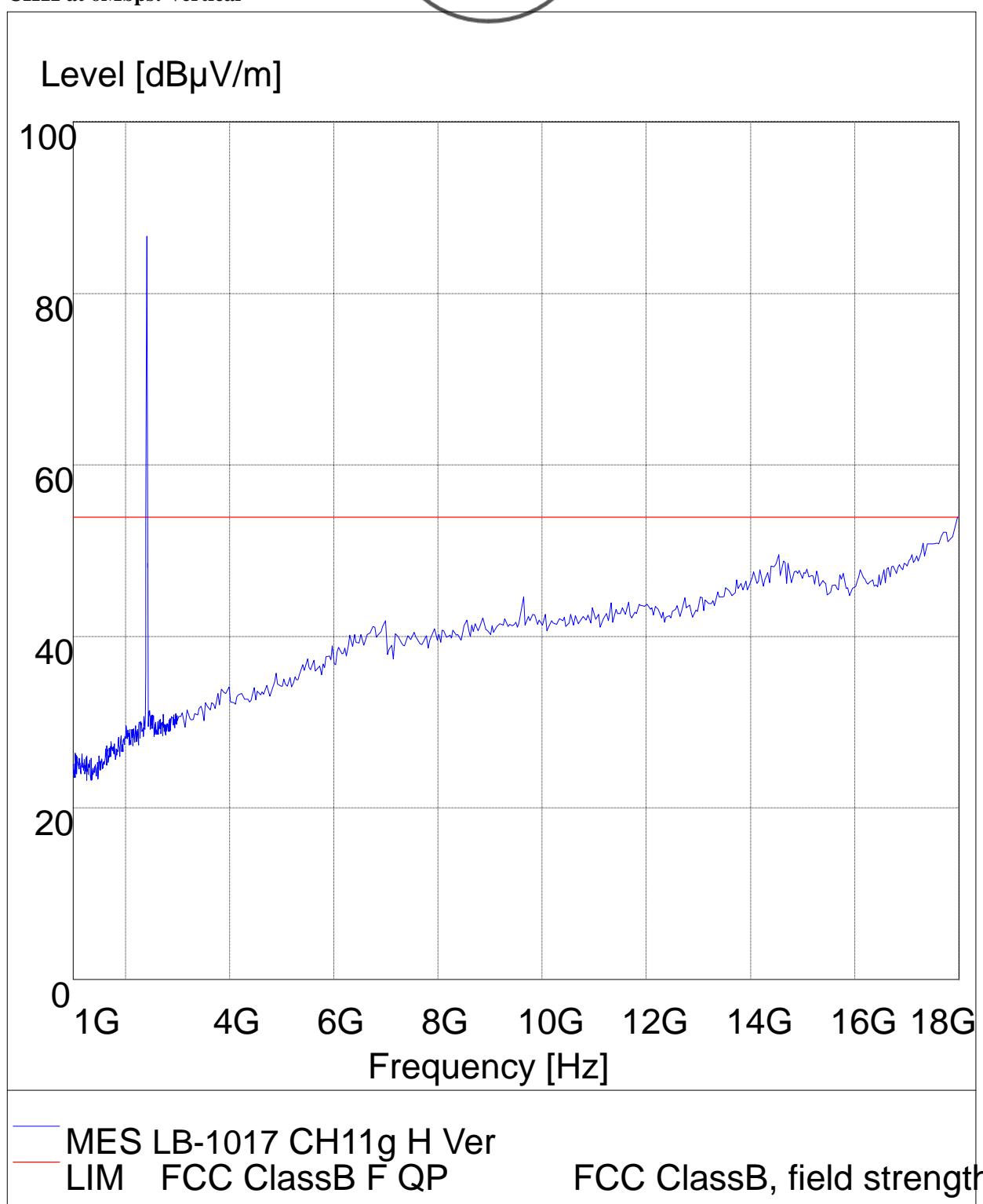
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CH11 at 6Mbps: Vertical



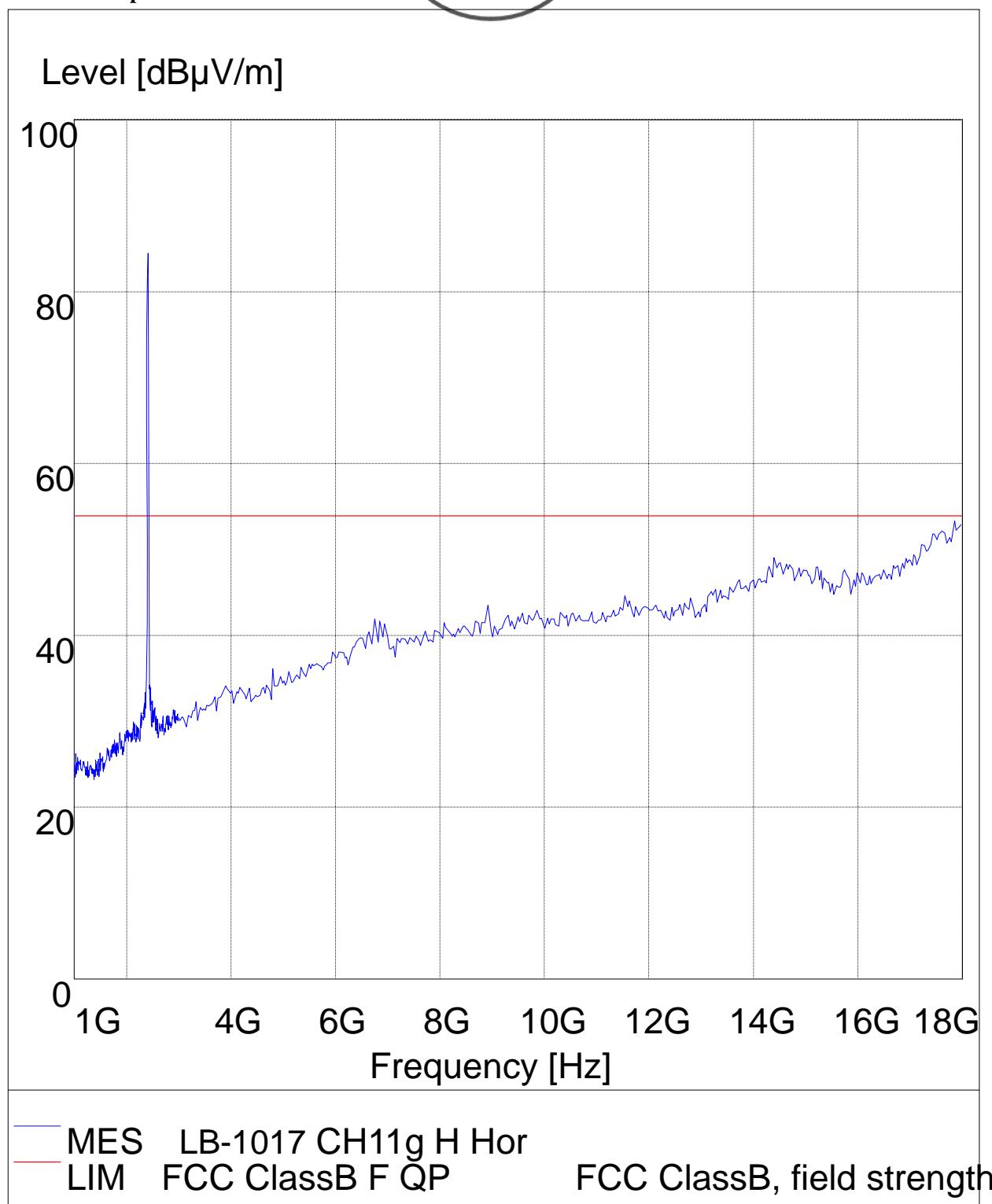
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CH11at 6Mbps: Horizontal



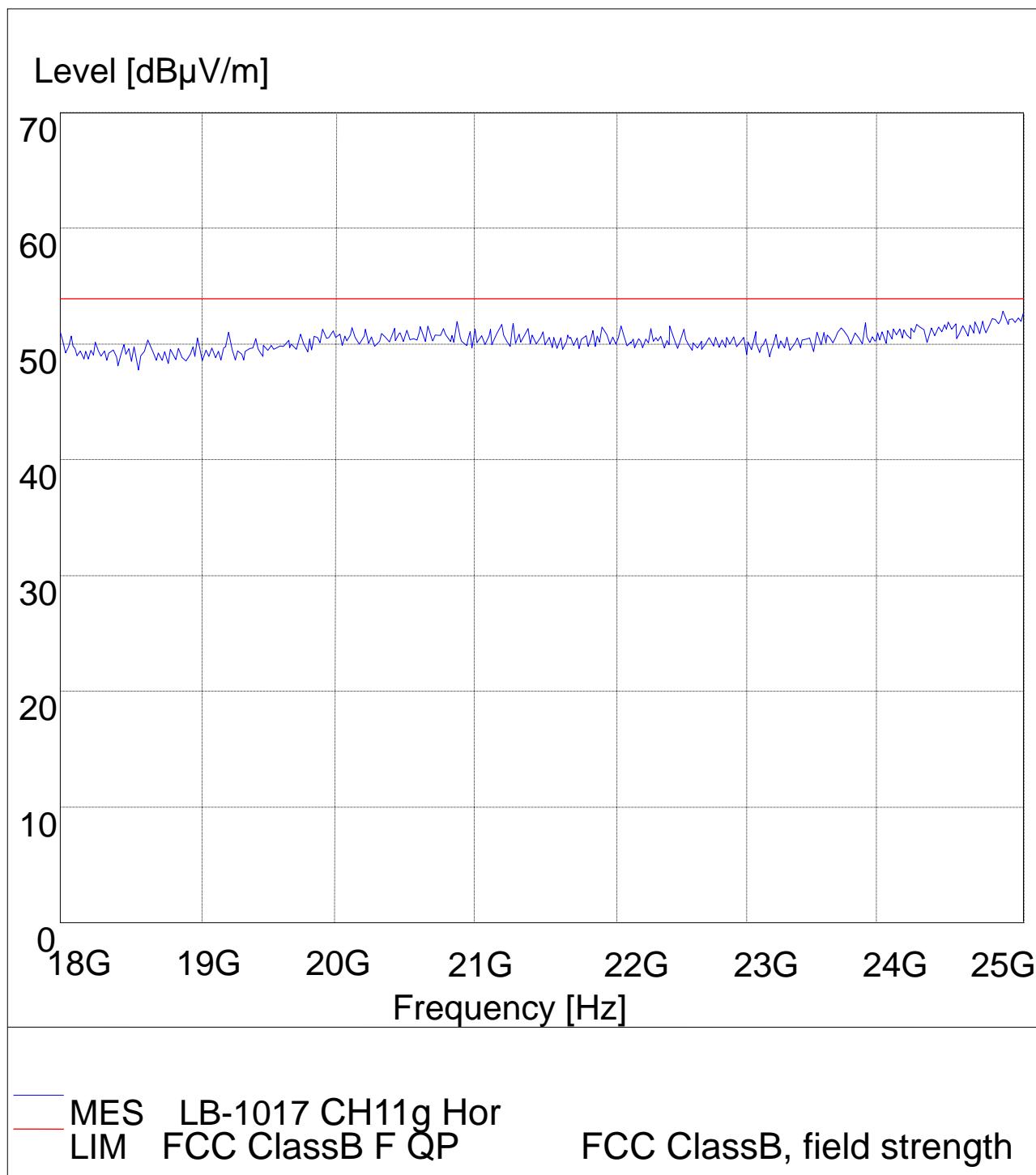
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18-25G  
CH11 6M Horizontal



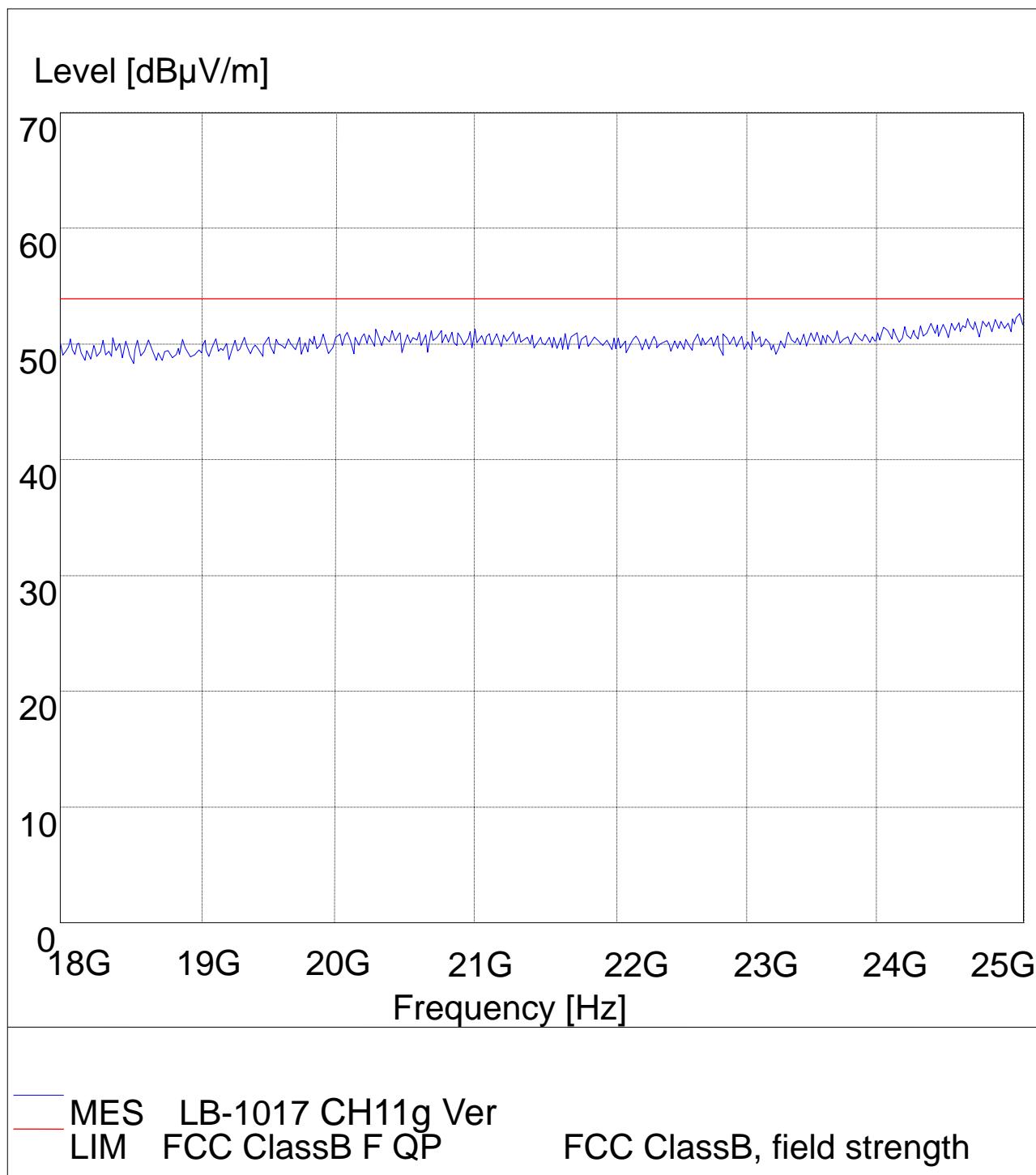
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18-25G  
CH11 6M Vertical



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**Operation Mode: Transmitting & Receiving under CH01 at 11Mbps**

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
2412.00	101.7 (PK)/ 88.6(AV)	V	Fundamental Frequency
2412.00	97.7 (PK)/85.6 (AV)	H	
4824.00	--	H/V	74(Peak)/ 54(AV)
7236.00	--	H/V	74(Peak)/ 54(AV)
9648.00	--	H/V	74(Peak)/ 54(AV)
12060	--	H/V	74(Peak)/ 54(AV)
14472	--	H/V	74(Peak)/ 54(AV)
16684	--	H/V	74(Peak)/ 54(AV)
19296	--	H/V	74(Peak)/ 54(AV)
21708	--	H/V	74(Peak)/ 54(AV)
24120	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark “--” means that the emissions level is too low to be measured
3. For 802.11b mode 11Mbps
4. Test results are for the worst case condition

**Operation Mode: Transmitting & Receiving under CH06 at 11Mbps**

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
2437.00	103.1 (PK)/ 90.8(AV)	V	Fundamental Frequency
2437.00	98.8 (PK)/87.0 (AV)	H	
4874.00	--	H/V	74(Peak)/ 54(AV)
7311.00	--	H/V	74(Peak)/ 54(AV)
9748.00	--	H/V	74(Peak)/ 54(AV)
12185	--	H/V	74(Peak)/ 54(AV)
14622	--	H/V	74(Peak)/ 54(AV)
17059	--	H/V	74(Peak)/ 54(AV)
19496	--	H/V	74(Peak)/ 54(AV)
21933	--	H/V	74(Peak)/ 54(AV)
24370	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark “--” means that the emissions level is too low to be measured
3. For 802.11b mode 11Mbps
4. test results are for the worst case condition

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**Operation Mode: Transmitting & Receiving under CH11 at 11Mbps**

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
2462.00	104.9 (PK)/ 92.9(AV)	V	Fundamental Frequency
2462.00	100.2 (PK)/89.3 (AV)	H	
4924	--	H/V	74(Peak)/ 54(AV)
7368	--	H/V	74(Peak)/ 54(AV)
9848	--	H/V	74(Peak)/ 54(AV)
12310	--	H/V	74(Peak)/ 54(AV)
14772	--	H/V	74(Peak)/ 54(AV)
17234	--	H/V	74(Peak)/ 54(AV)
19696	--	H/V	74(Peak)/ 54(AV)
22158	--	H/V	74(Peak)/ 54(AV)
24650	--	H/V	74(Peak)/ 54(AV)

- Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit  
2. Remark “--” means that the emissions level is too low to be measured  
3. For 802.11b mode at 11Mbps  
4. Test results are for the worst case condition

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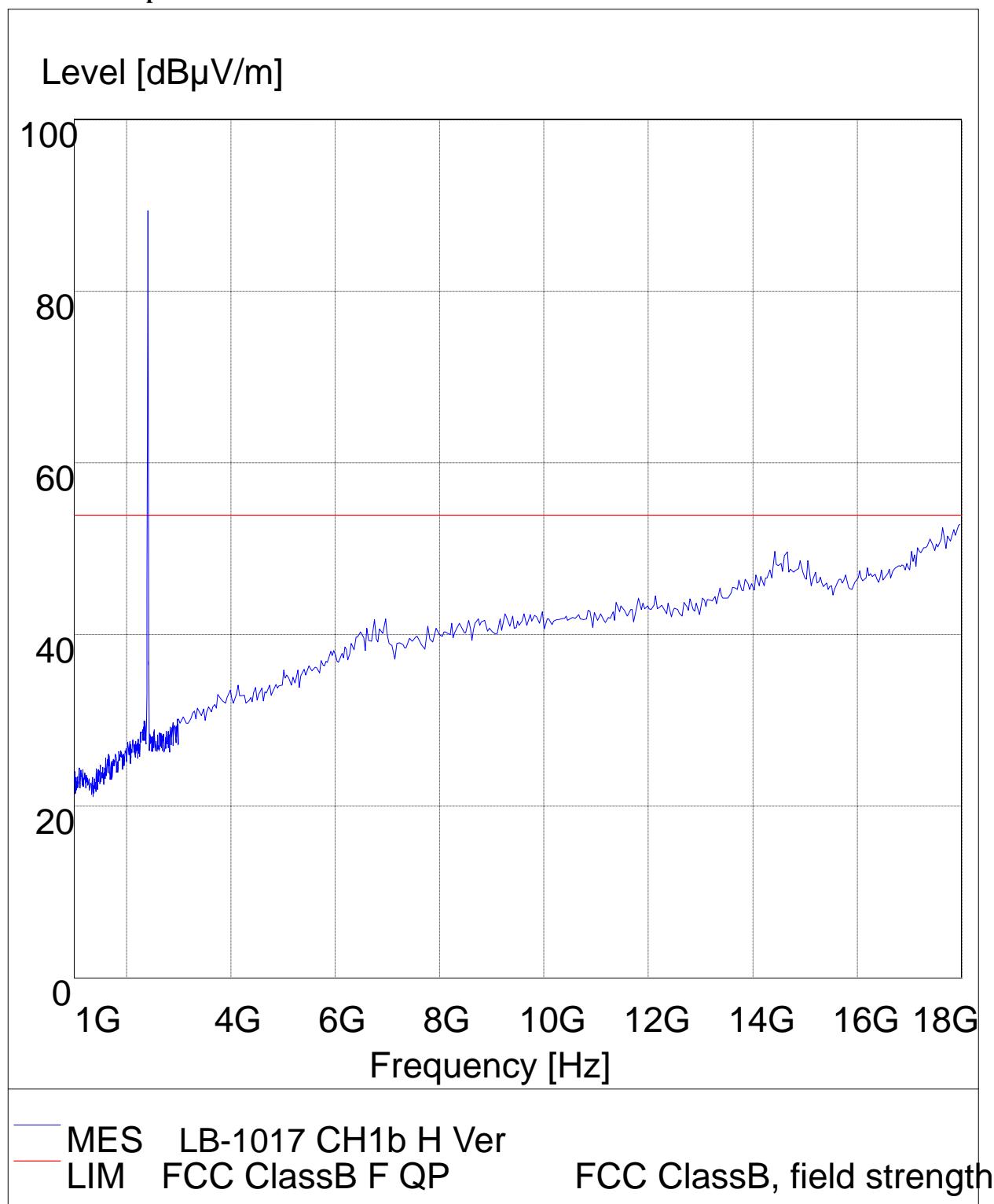
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Please refer to the following test plots for details:

**CH01 at 11Mbps: Vertical**



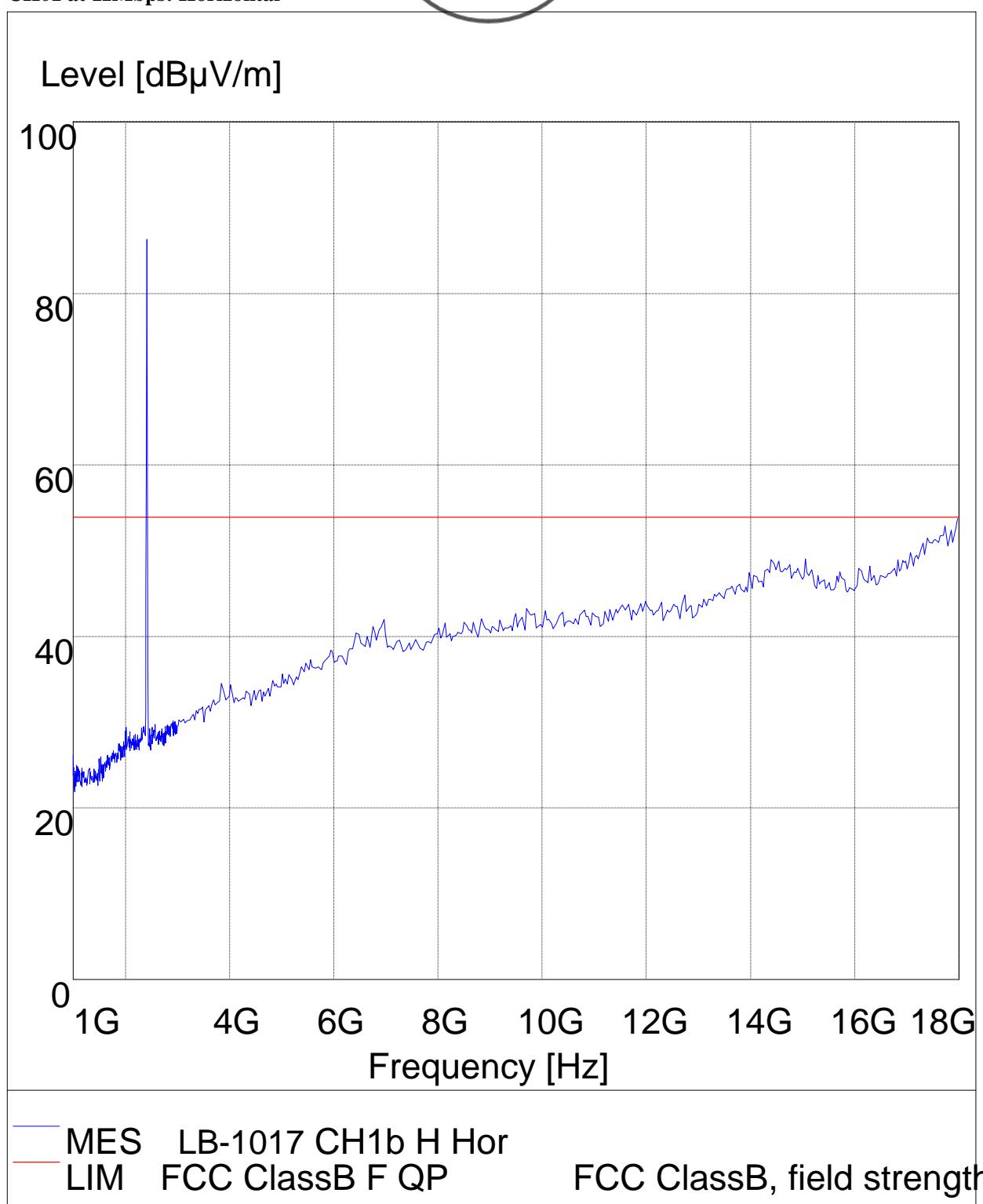
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CH01 at 11Mbps: Horizontal



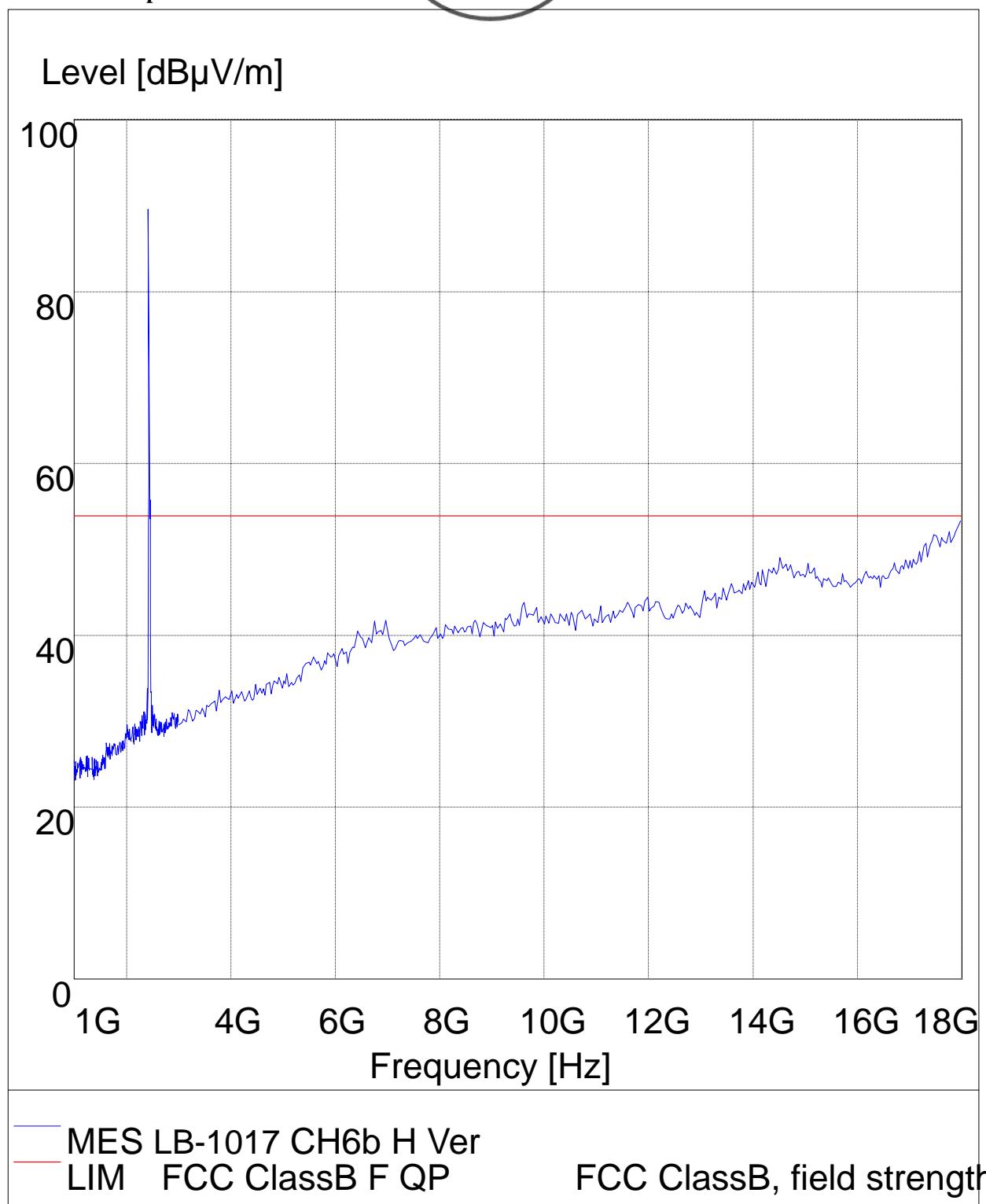
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CH06 at 11Mbps: Vertical



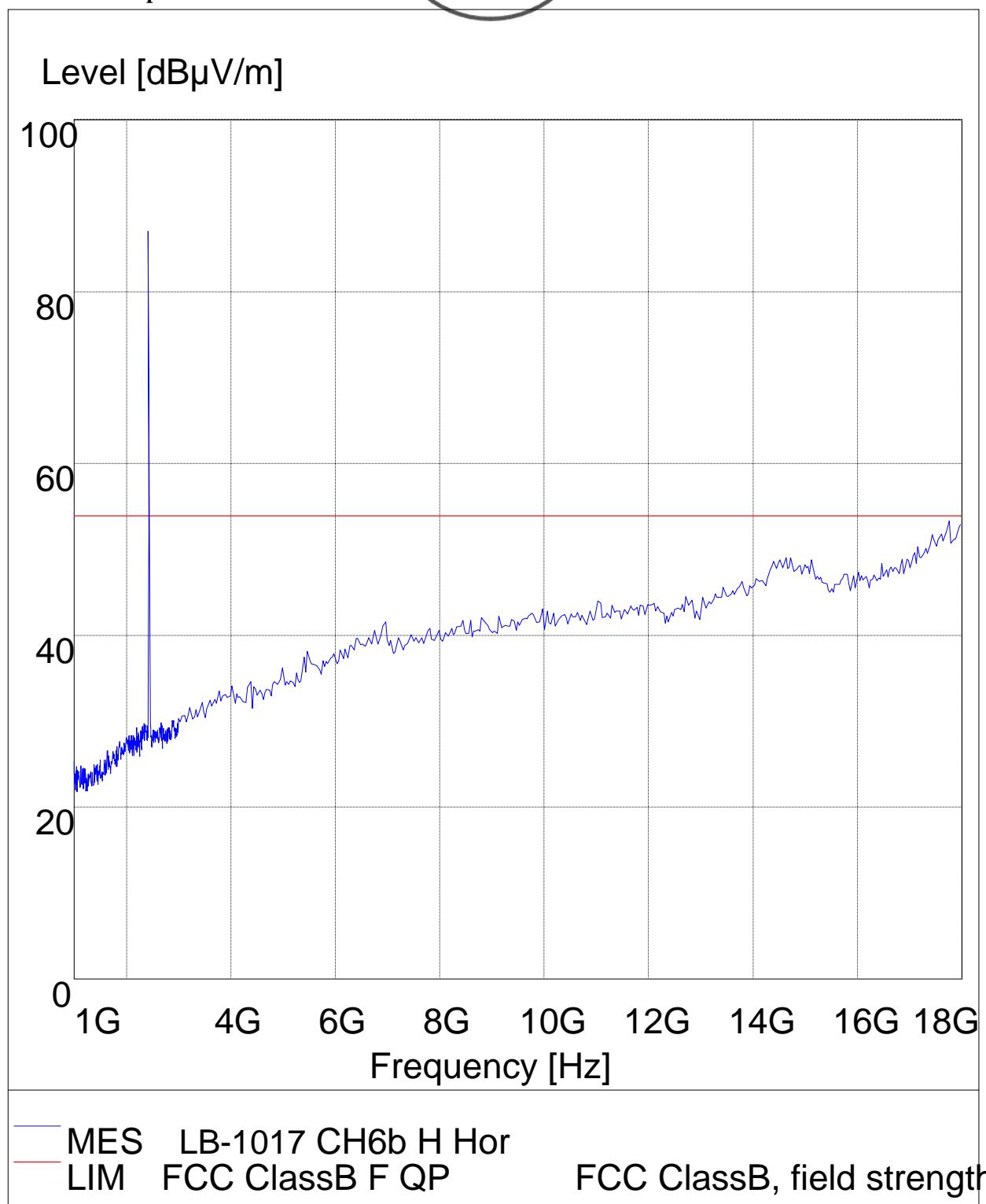
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CH06 at 11Mbps: Horizontal



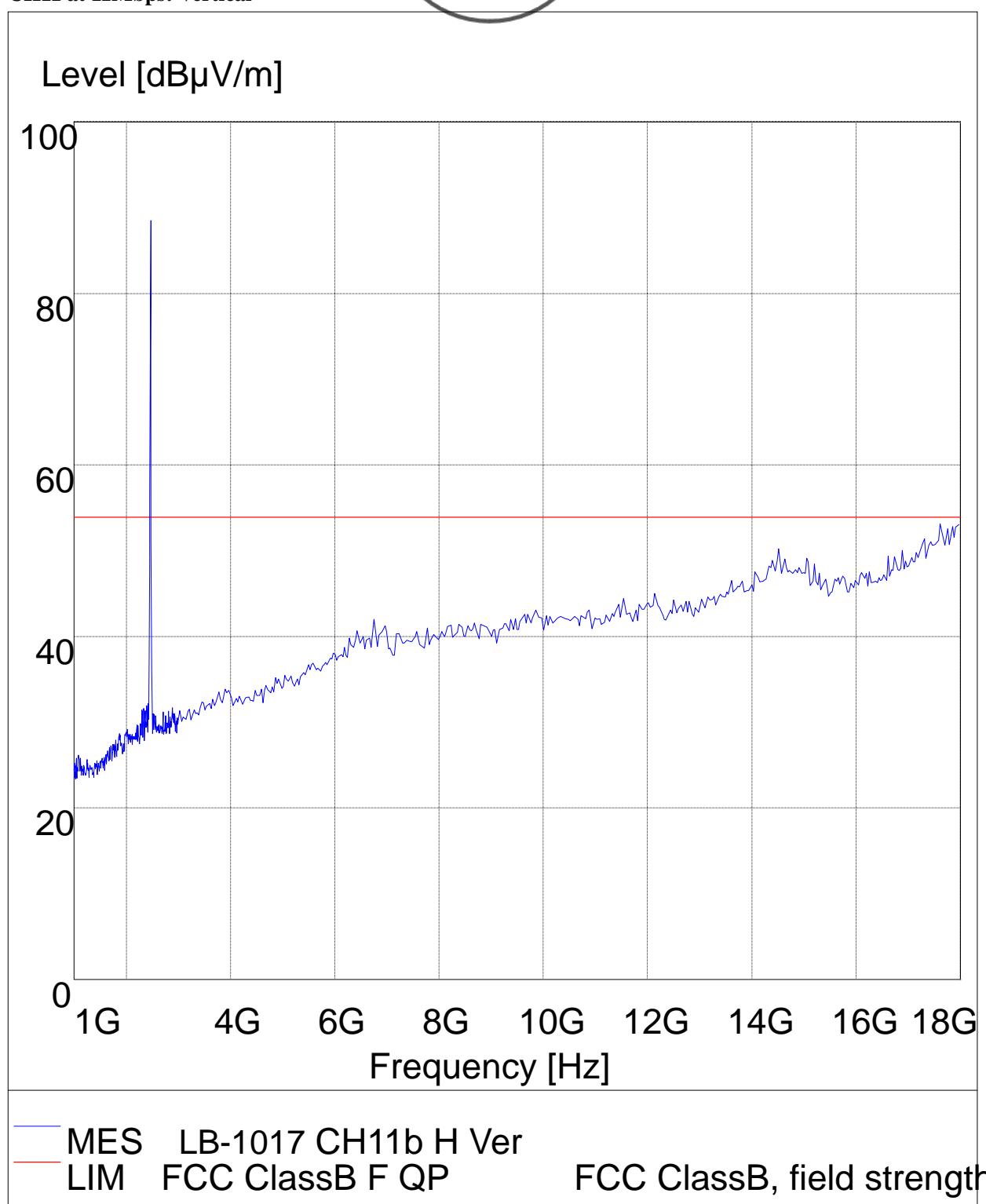
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CH11 at 11Mbps: Vertical



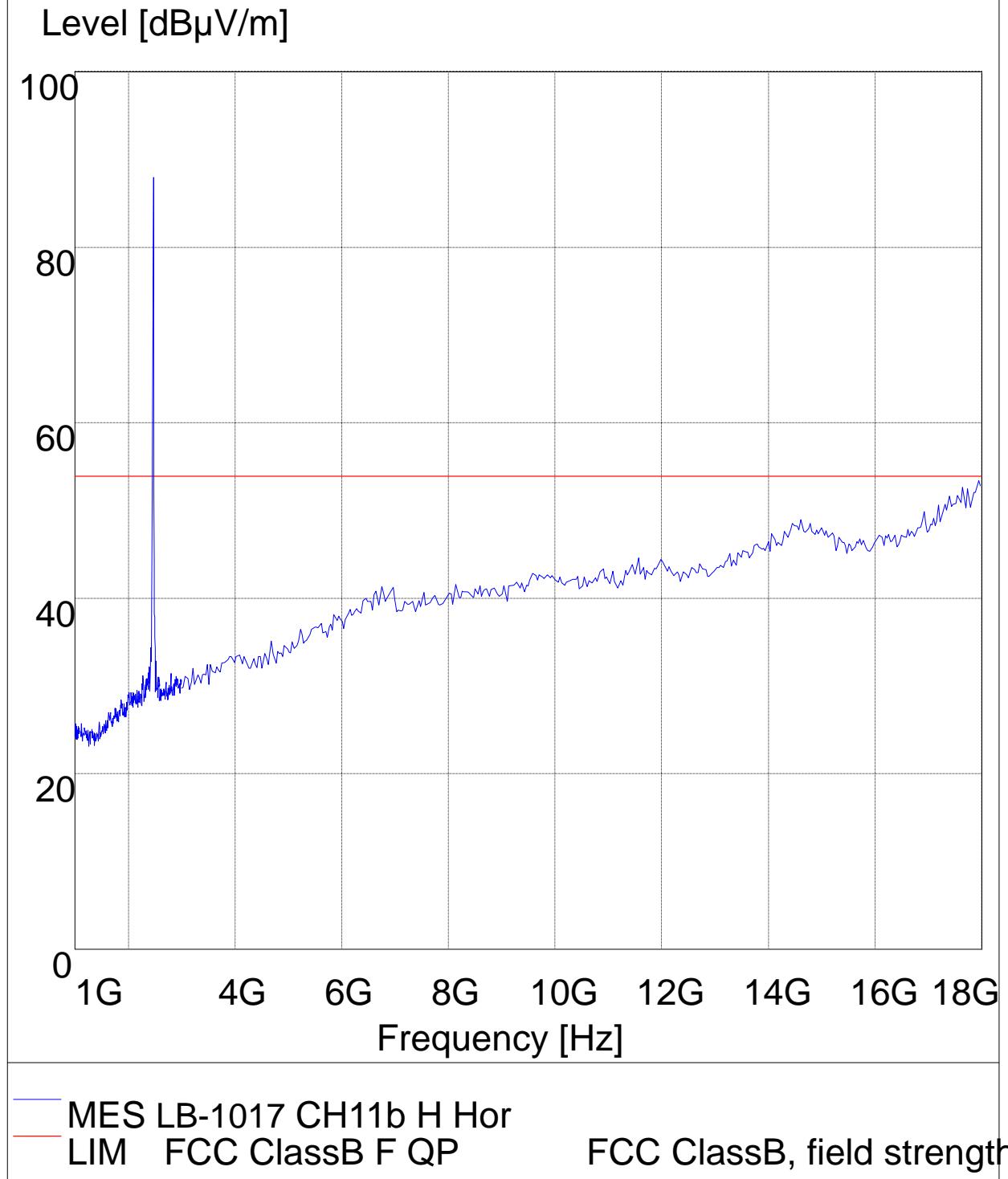
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CH11 at 11Mbps: Horizontal



The report refers only to the sample tested and does not apply to the bulk.

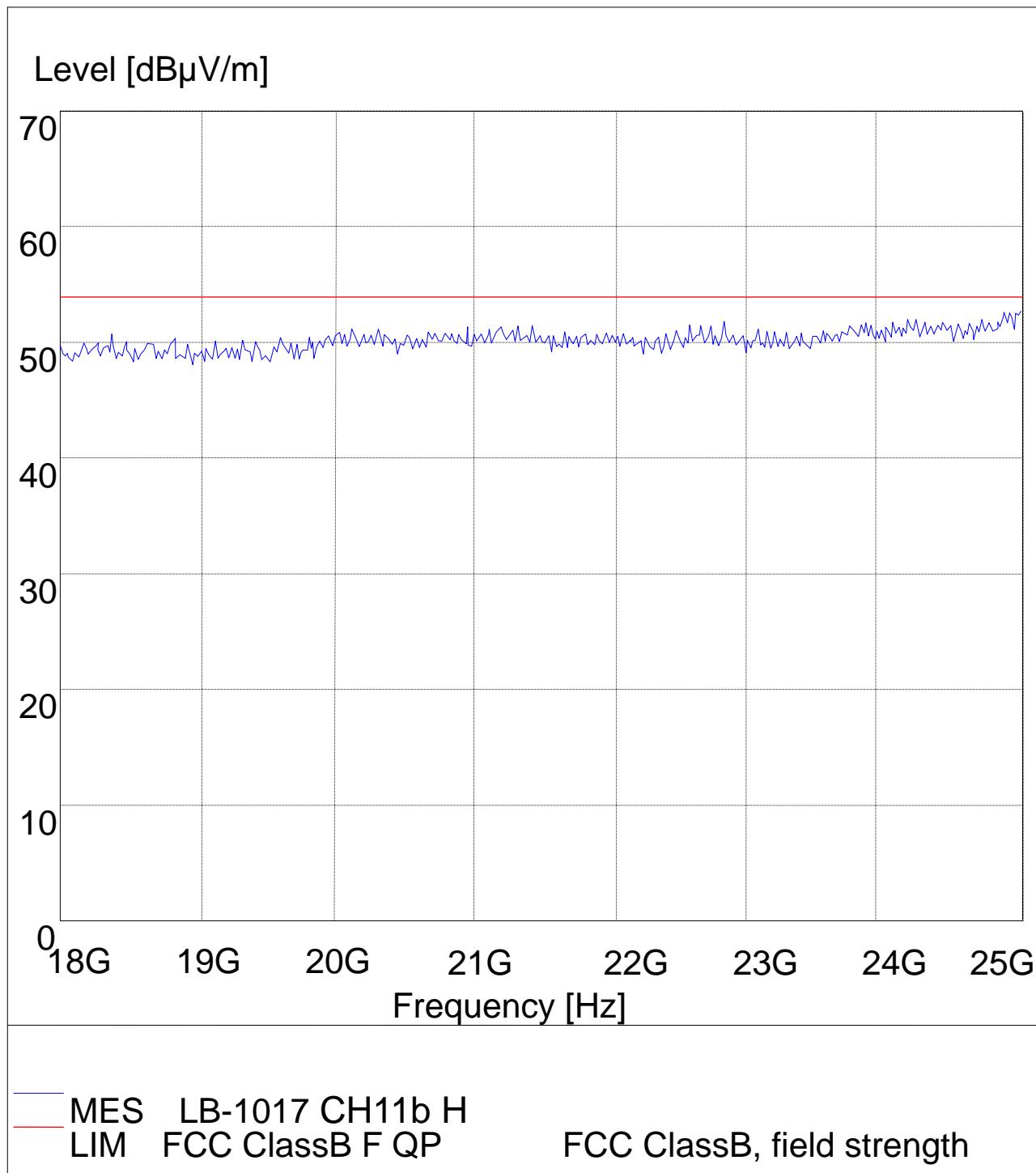
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18-25G

CH11 11M Horizontal



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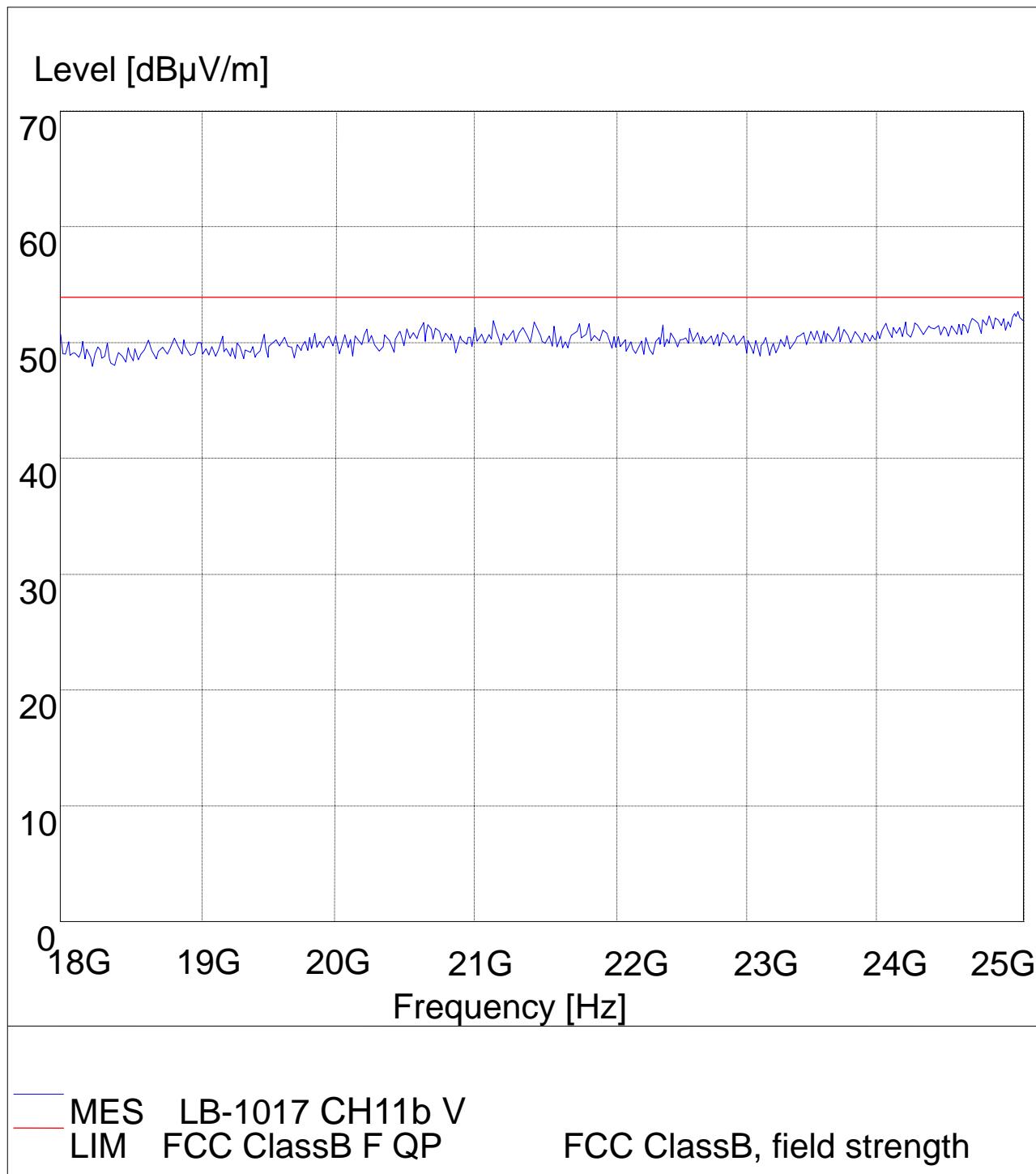
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18-25G

CH11 11M Vertical



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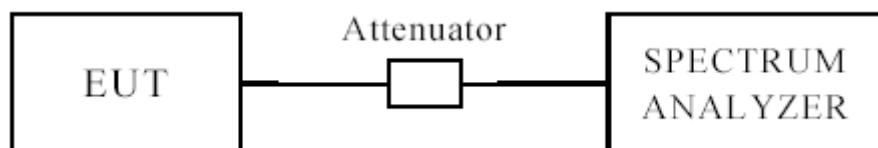
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## 7.0 6dB Bandwidth Measurement

### 7.1 Test Setup



### 7.2 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is >500KHz

### 7.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator.

The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 kHz RBW and 100 kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

### 7.4 Test Result

EUT		Laptop Computer		Model	
Mode		802.11b		Input Voltage	
Temperature		24 deg. C,		Humidity	
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/Fail
1	2412	1	13.11	0.5	Pass
		11	12.59		
6	2437	1	13.07	0.5	Pass
		11	12.55		
11	2462	1	13.14	0.5	Pass
		11	12.59		

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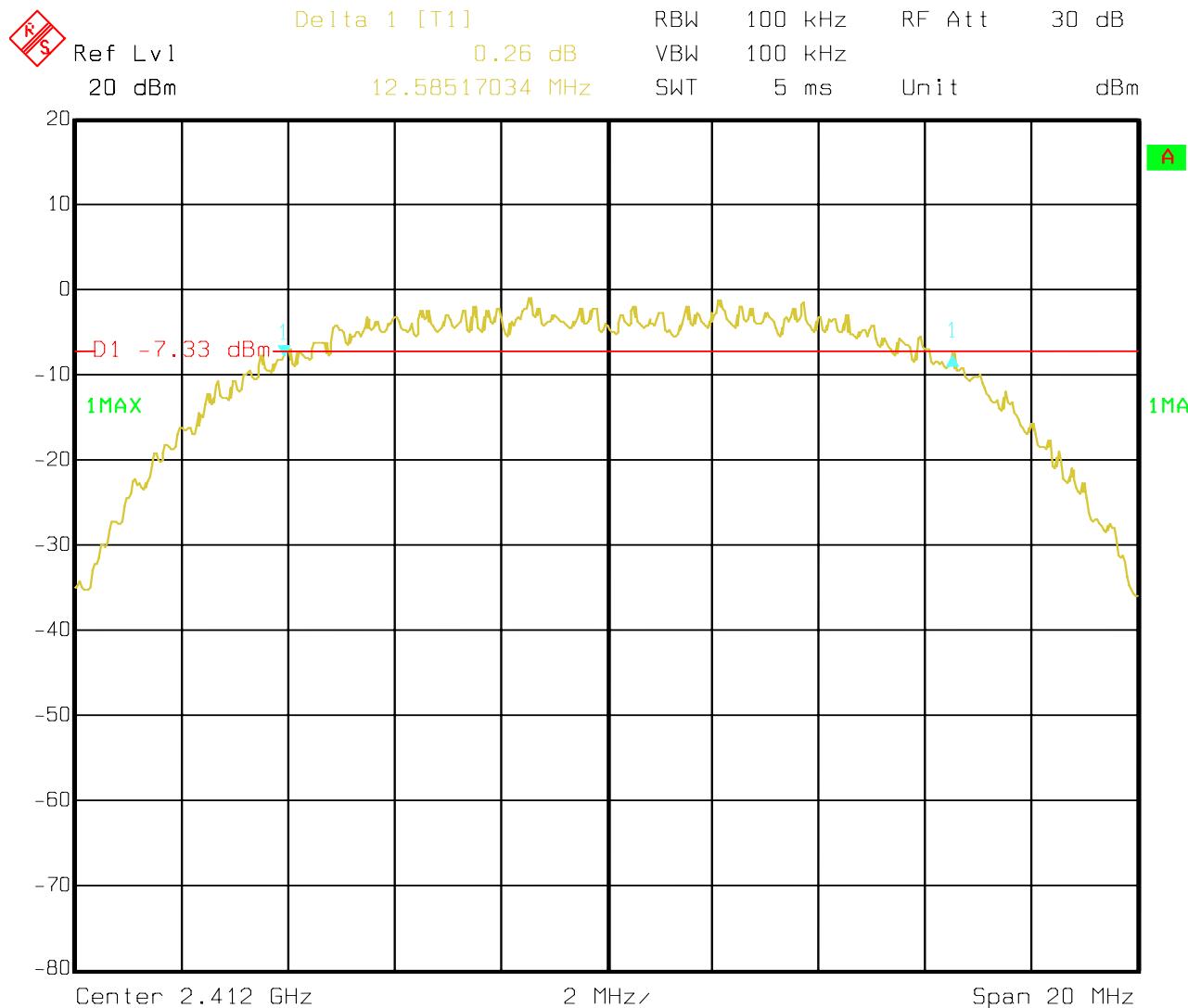
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Test Figure:

**1. Condition: 802.11b at 11Mbps of CH01**



Date: 11.MAR.2009 11:00:58

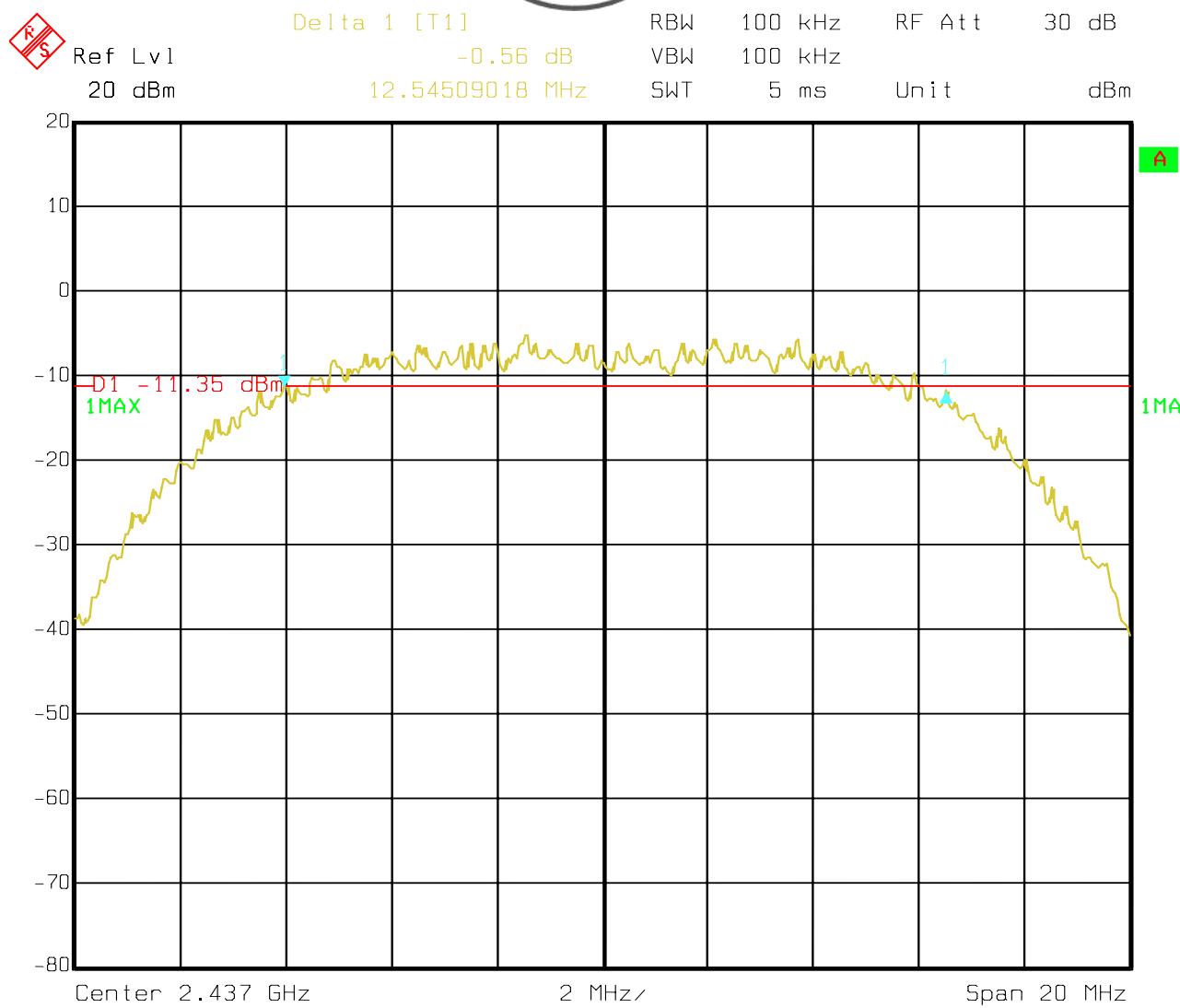
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**2. Condition: 802.11b at 11Mbps of CH06**



Date: 11.MAR.2009 10:58:34

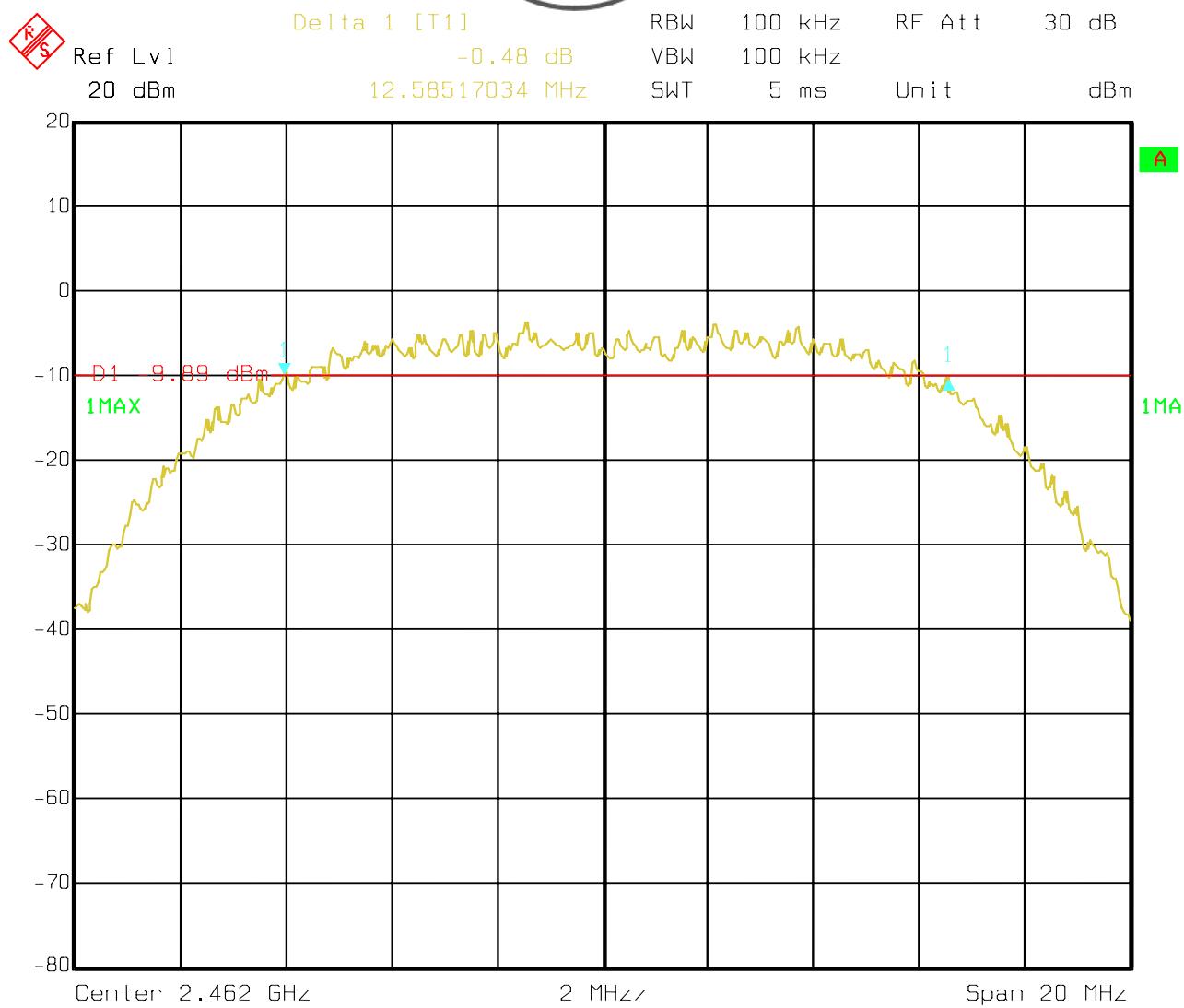
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### 3. 802.11b at 11Mbps of CH11



Date: 11.MAR.2009 10:57:14

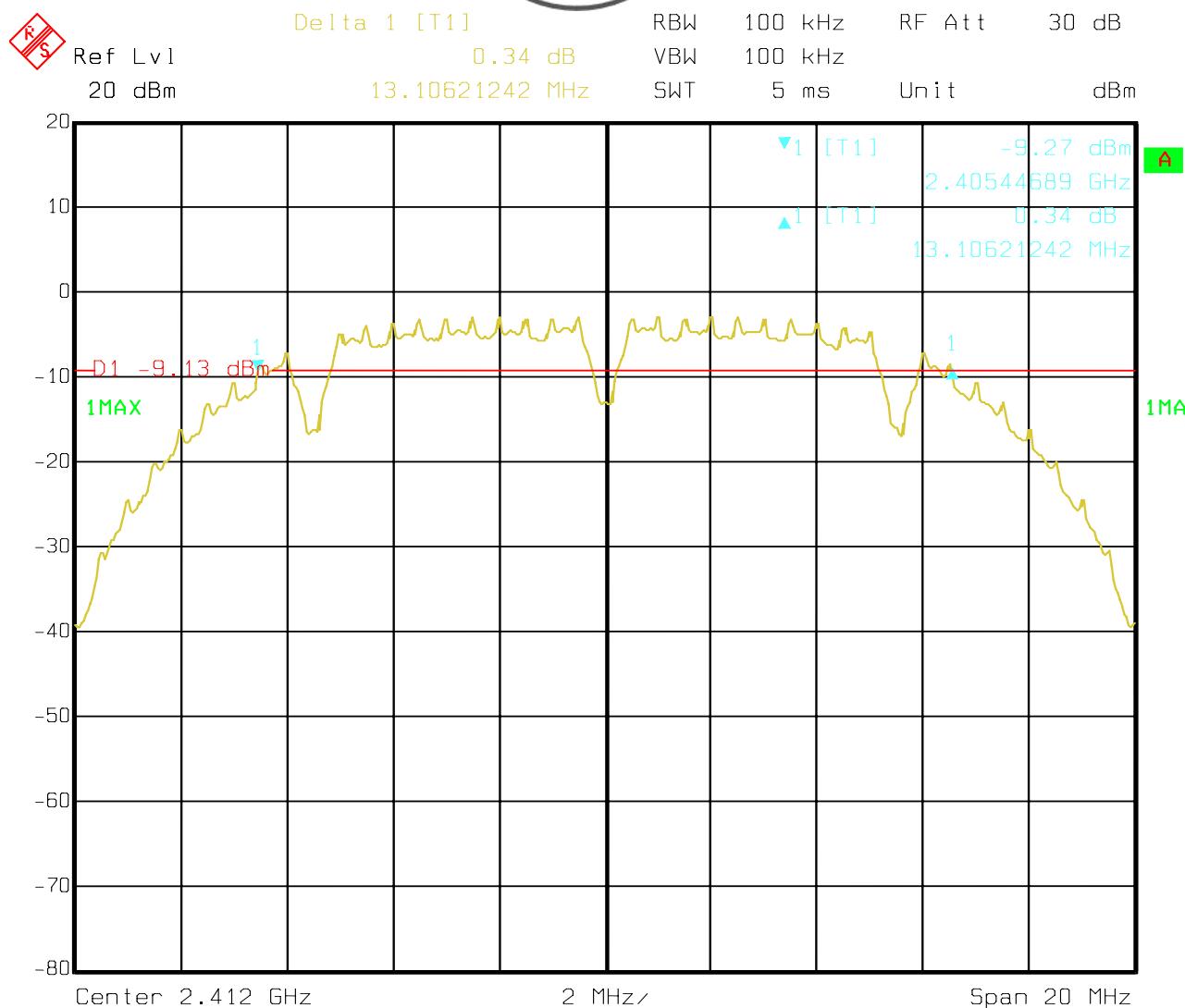
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#### 4. 802.11b at 1Mbps of CH01



Date: 11.MAR.2009 10:52:17

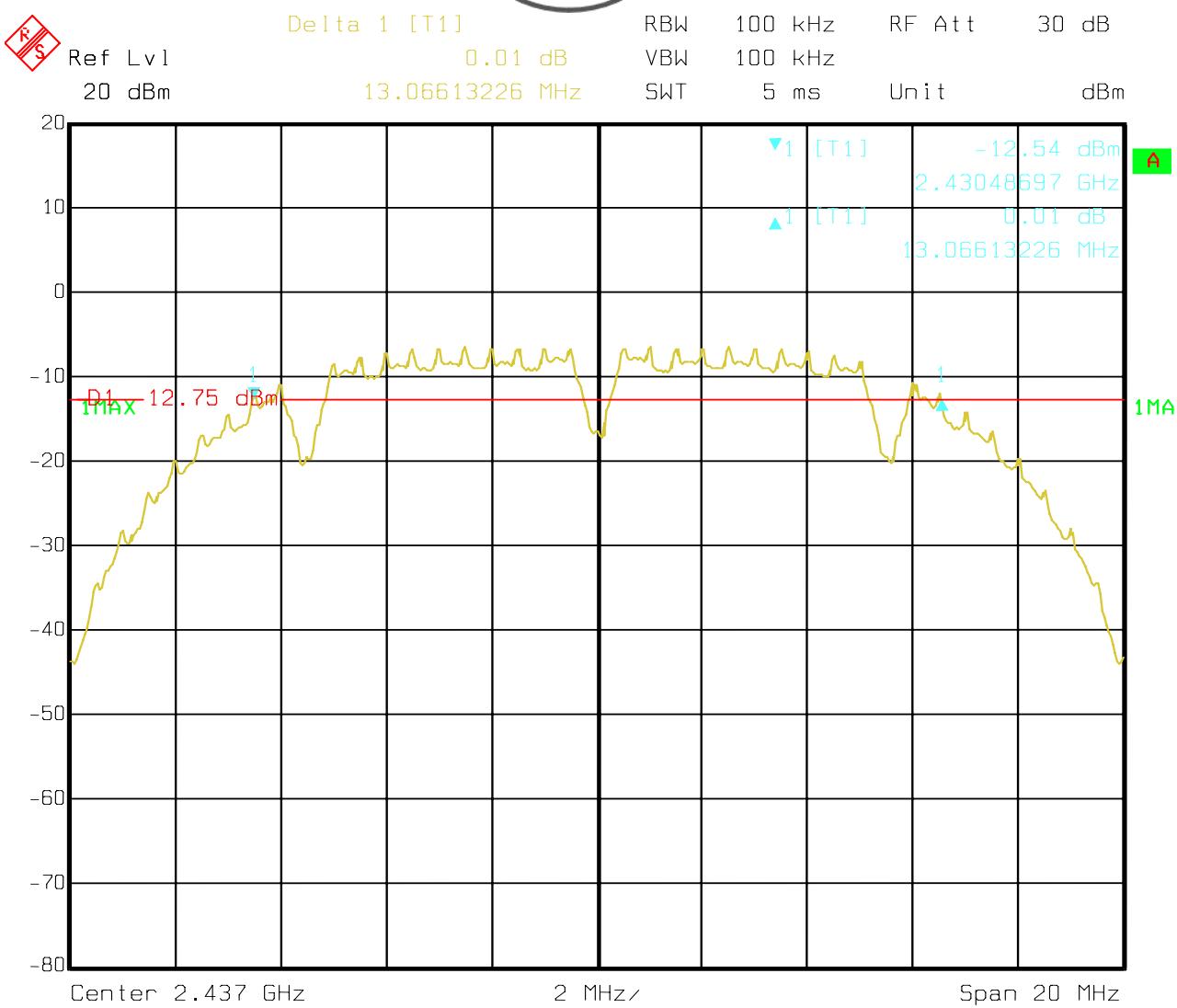
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## 5. 802.11b at 1Mbps of CH06



Date: 11.MAR.2009 10:53:34

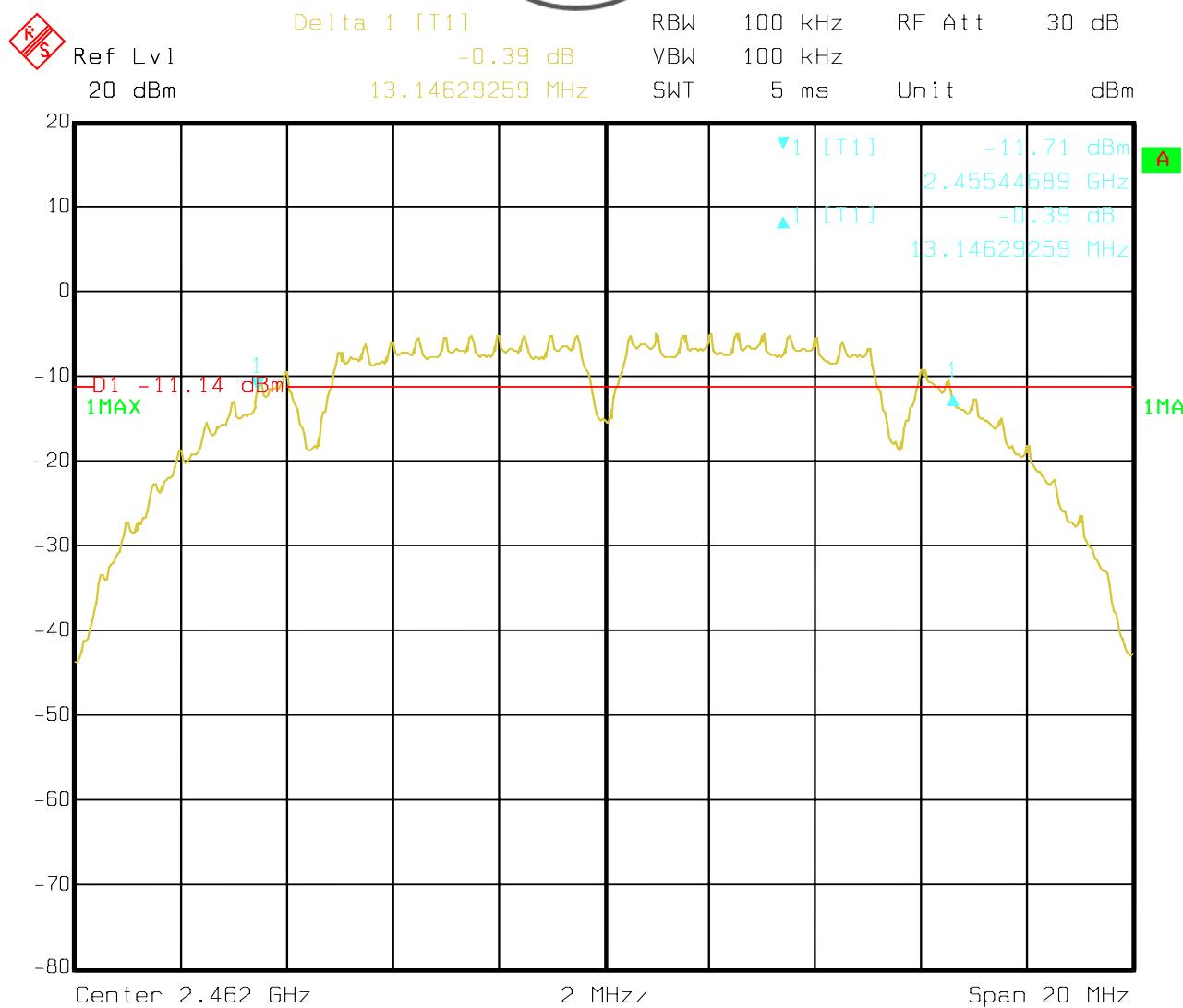
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## 6. 802.11b at 1Mbps of CH11



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EUT	Laptop Computer		Model	LB-1017	
Mode	802.11g		Input Voltage	DC19V	
Temperature	24 deg. C,		Humidity	56% RH	
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/Fail
1	2412	6	16.43	0.5	Pass
		54	16.51		
6	2437	6	16.43	0.5	Pass
		54	16.51		
11	2462	6	16.43	0.5	Pass
		54	16.55		

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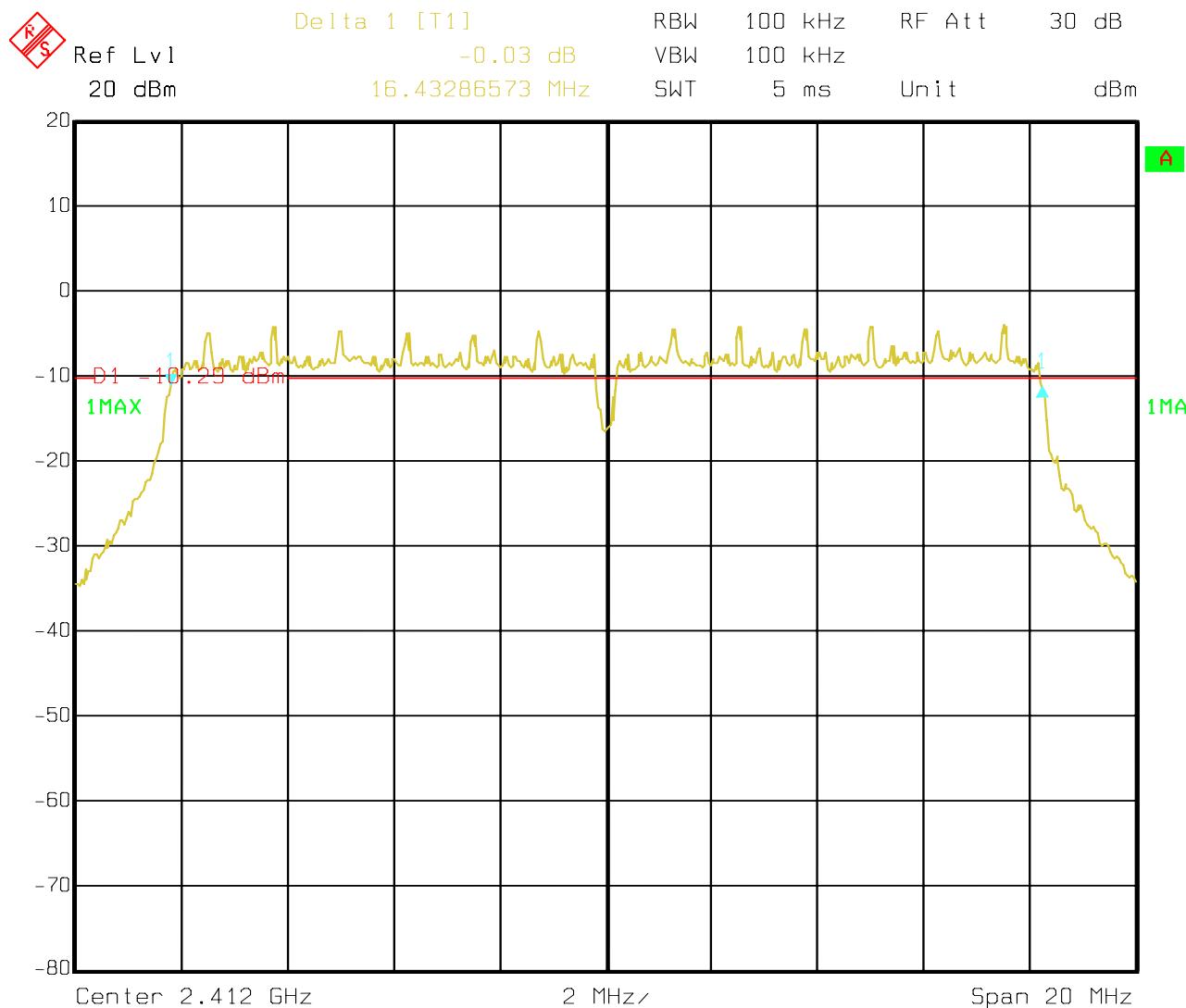
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**Test Plots:**

**1. 802.11g at 6Mbps of CH01**



Date: 11.MAR.2009 11:07:43

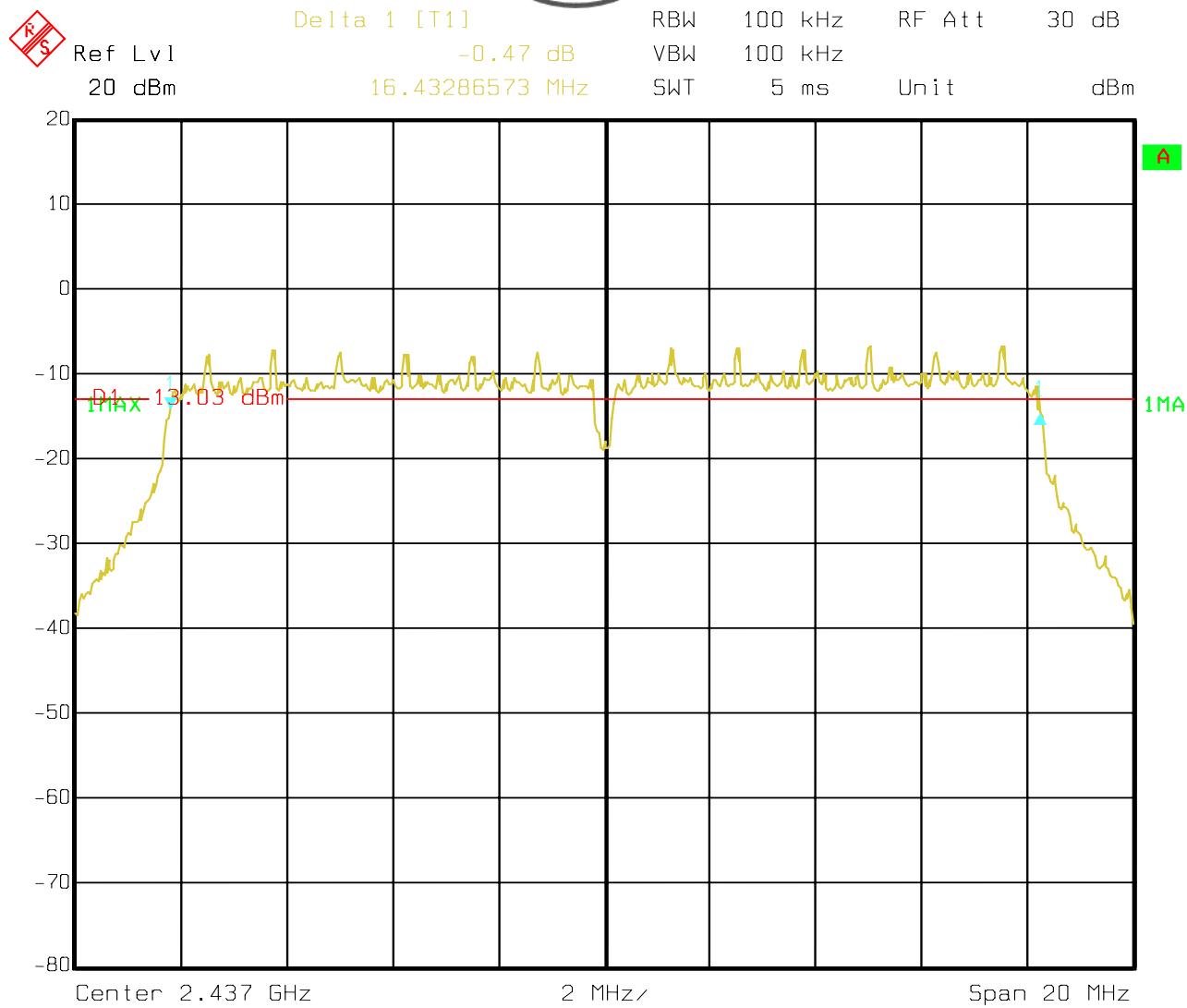
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## 2. 802.11g at 6Mbps of CH06



Date: 11.MAR.2009 11:06:42

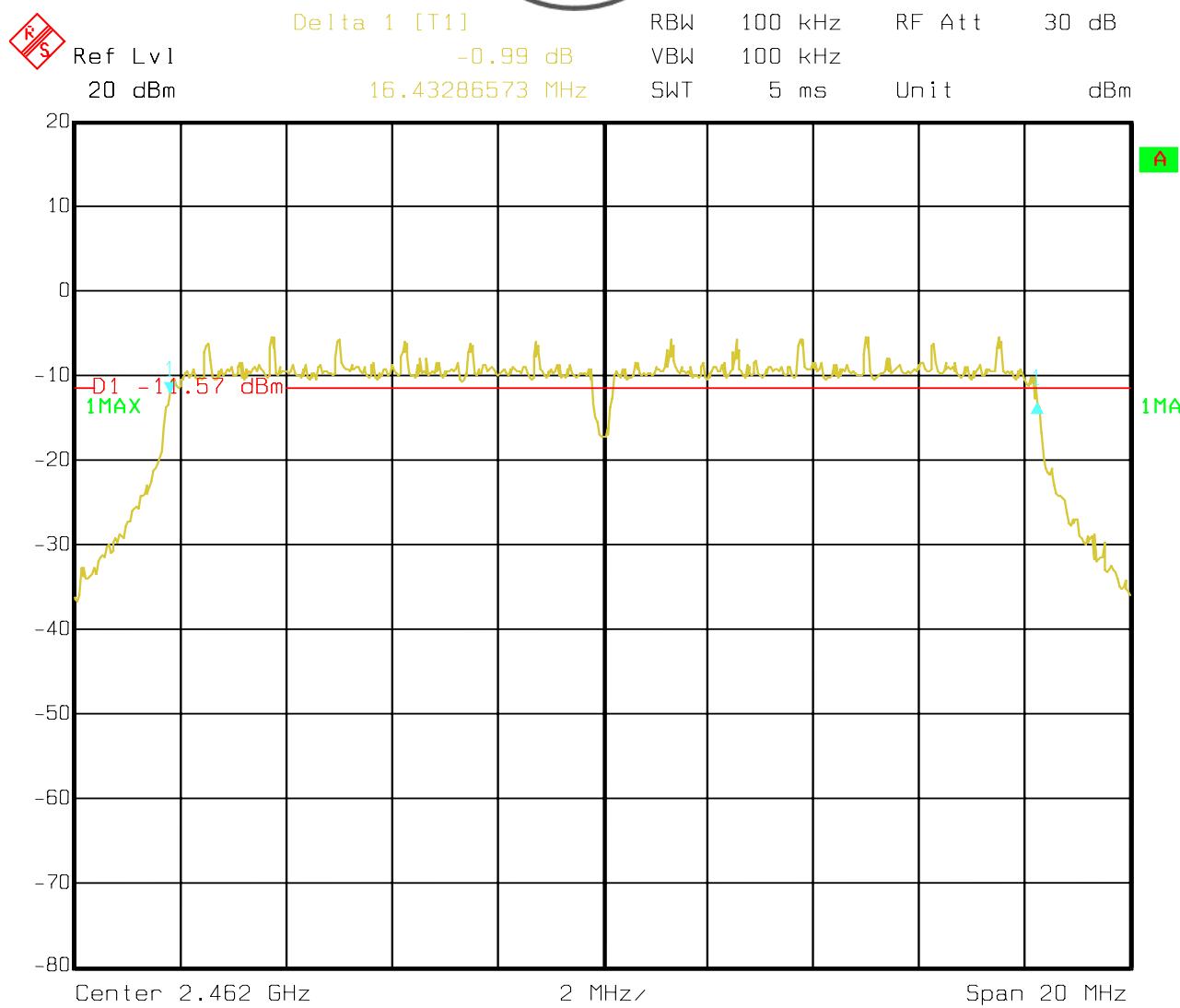
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### 3. 802.11g at 6Mbps of CH11



Date: 11.MAR.2009 11:05:47

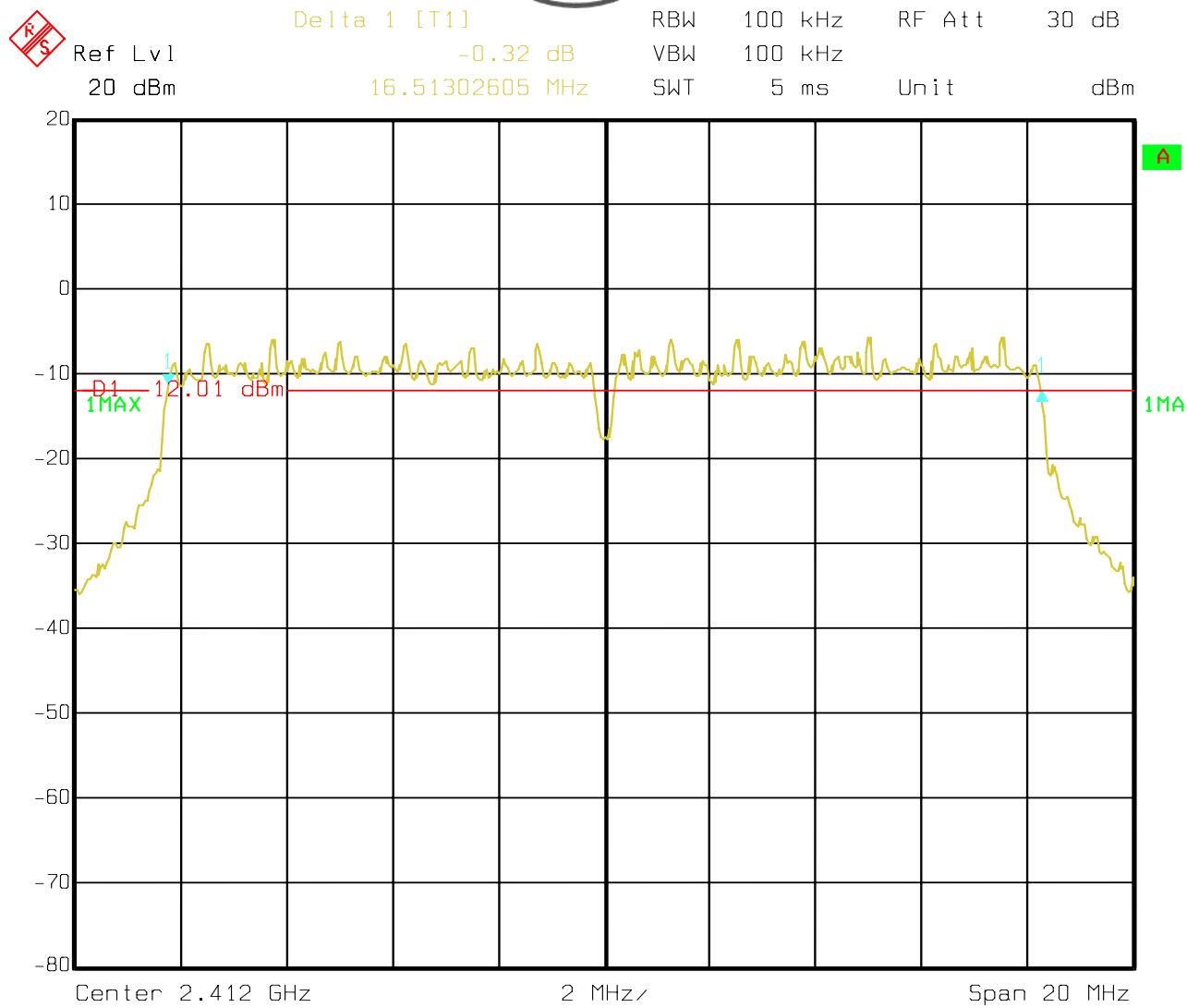
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#### 4. 802.11g at 54Mbps of CH01



Date: 11.MAR.2009 11:02:20

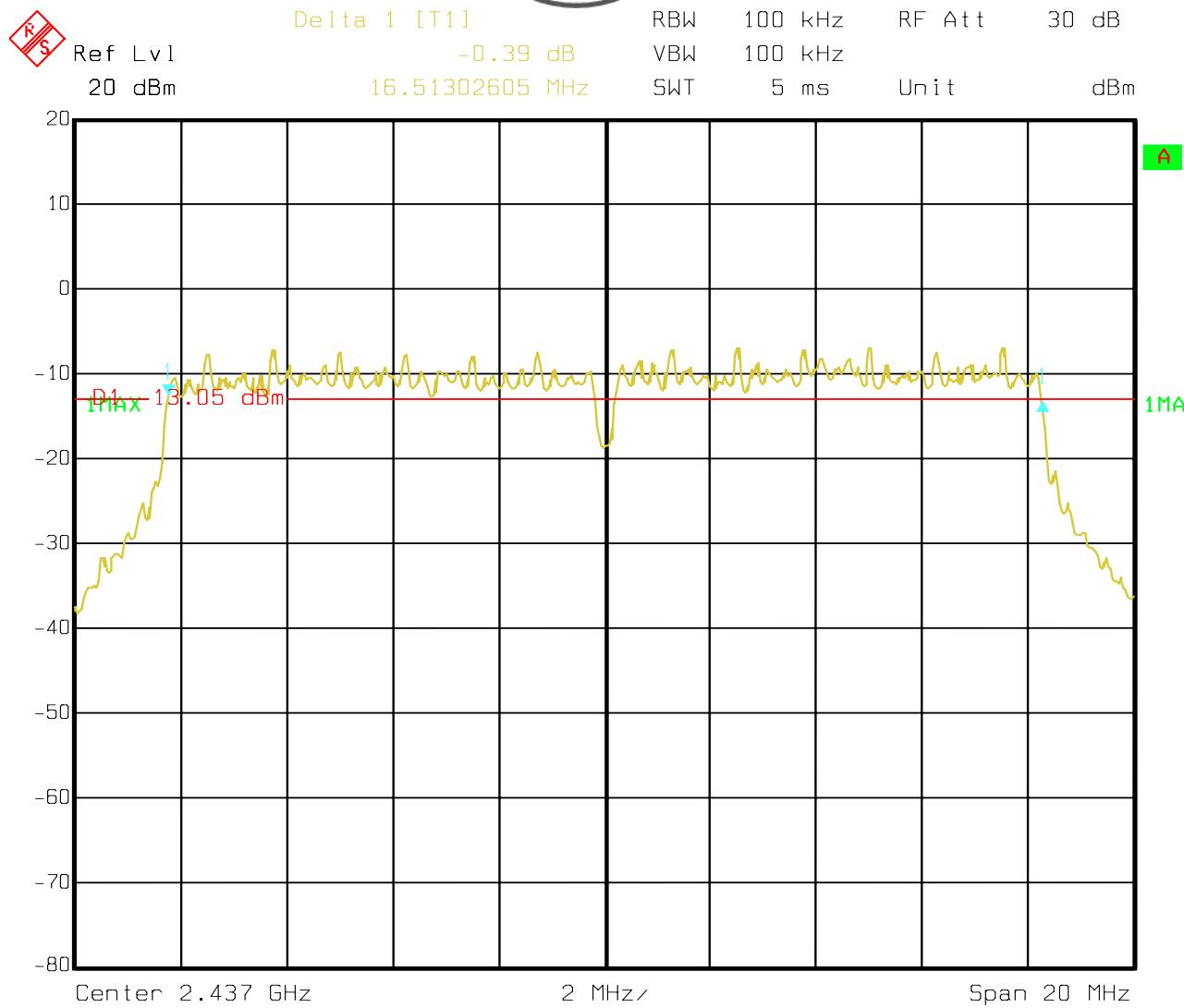
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### 5. 802.11g at 54Mbps of CH06



Date: 11.MAR.2009 11:03:52

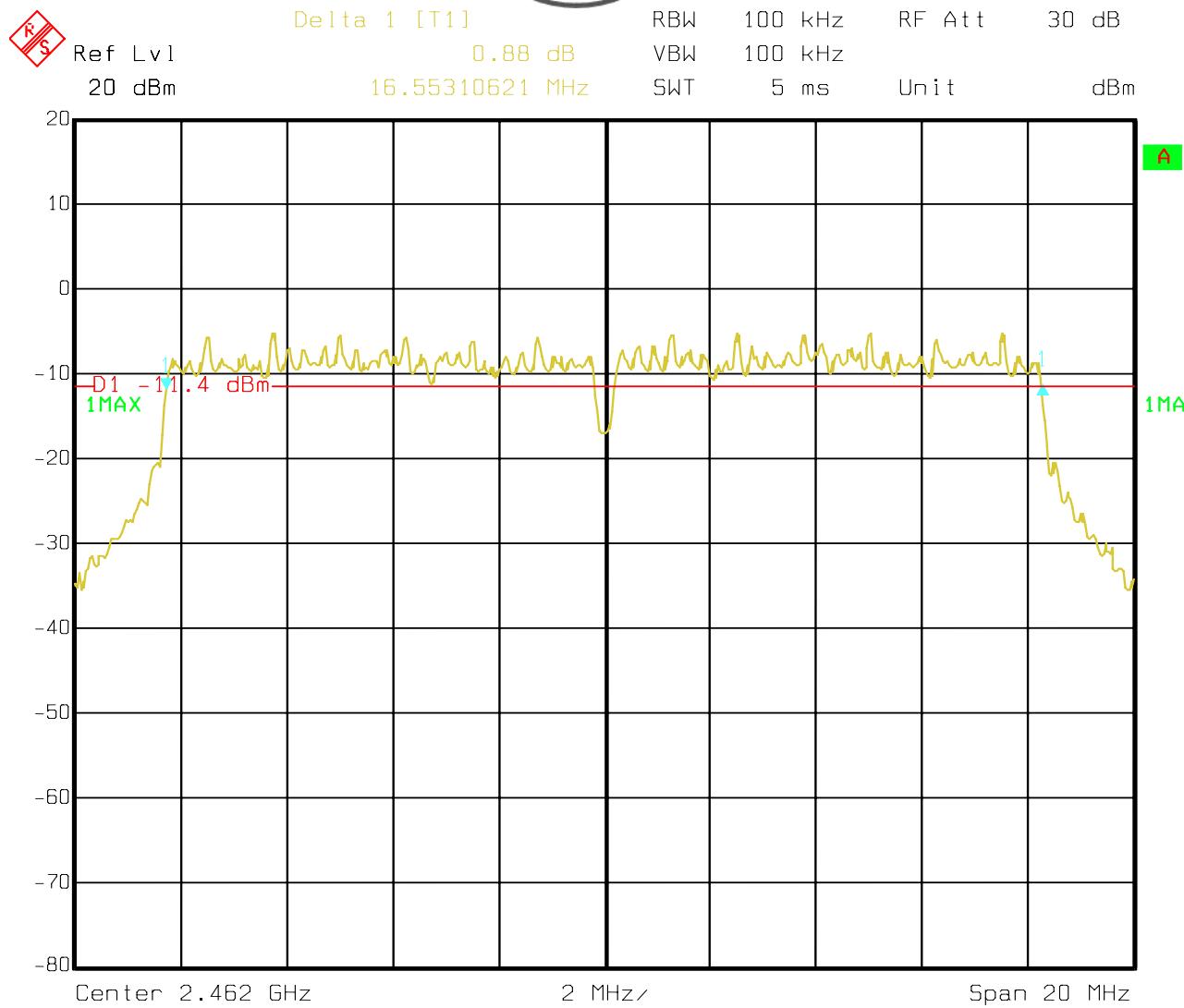
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### 6. 802.11g at 54Mbps of CH11



Date: 11.MAR.2009 11:04:54

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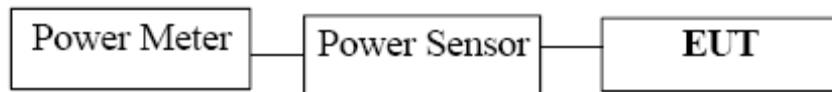
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## 8. Maximum Peak Output Power

### 8.1 Test Setup



### 8.2 Limits of Maximum Peak Output Power

The Maximum Peak Output Power Measurement is 30dBm.

### 8.3 Test Procedure

The RF power output was measured with a Power meter connected to the RF Antenna connector ( conducted measurement ) while EUT was operating in transmit mode at the appropriate centre frequency.

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#### 8.4 Test Results

EUT		Laptop Computer	Model	LB-1017
Mode		802.11g	Input Voltage	120V~
Temperature		24 deg. C,	Humidity	56% RH
Channel	Channel Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Pass/ Fail
1	2412	13.05	30	Pass
6	2437	12.95	30	Pass
11	2462	12.60	30	Pass

Note: 1. At final test to get the worst-case emission at 6Mbps for CH01, CH06 and CH11

2. The result basic equation calculation as follow:

$$\text{Peak Power Output} = \text{Peak Power Reading} + \text{Cable loss} + \text{Attenuator}$$

EUT		Laptop Computer	Model	LB-1017
Mode		802.11b	Input Voltage	120V~
Temperature		24 deg. C,	Humidity	56% RH
Channel	Channel Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Pass/ Fail
1	2412	12.93	30	Pass
6	2437	13.07	30	Pass
11	2462	13.10	30	Pass

Note: 1. At final test to get the worst-case emission at 11Mbps for CH01, CH06 and CH11

2. The result basic equation calculation as follow:

$$\text{Peak Power Output} = \text{Peak Power Reading} + \text{Cable loss} + \text{Attenuator}$$

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EUT		Laptop Computer			Model	LB-1017
Mode		802.11g			Input Voltage	Please see following
Temperature		24 deg. C,			Humidity	56% RH
Channel	Channel Frequency (MHz)	Voltage		Peak Power Output (dBm)	Peak Power Limit (dBm)	Pass/ Fail
1	2412	Vnor	138V	13.02	30	Pass
		Vmin	102V	12.97	30	Pass
6	2437	Vnor	138V	12.93	30	Pass
		Vmin	102V	12.88	30	Pass
11	2462	Vnor	138V	12.58	30	Pass
		Vmin	102V	12.56	30	Pass

Note: 1. At finial test to get the worst-case emission at 6Mbps for CH01, CH06 and CH11

2. The result basic equation calculation as follow:

$$\text{Peak Power Output} = \text{Peak Power Reading} + \text{Cable loss} + \text{Attenuator}$$

EUT		Laptop Computer			Model	LB-1017
Mode		802.11b			Input Voltage	Please see following
Temperature		24 deg. C,			Humidity	56% RH
Channel	Channel Frequency (MHz)	Voltage		Peak Power Output (dBm)	Peak Power Limit (dBm)	Pass/ Fail
1	2412	Vnor	138V	12.91	30	Pass
		Vmin	102V	12.89	30	Pass
6	2437	Vnor	138V	13.03	30	Pass
		Vmin	102V	12.98	30	Pass
11	2462	Vnor	138V	13.05	30	Pass
		Vmin	102V	13.01	30	Pass

Note: 1. At finial test to get the worst-case emission at 11Mbps for CH01, CH06 and CH11

2. The result basic equation calculation as follow:

$$\text{Peak Power Output} = \text{Peak Power Reading} + \text{Cable loss} + \text{Attenuator}$$

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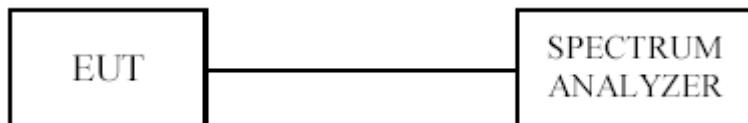
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## 9. Power Spectral Density Measurement

### 9.1 Test Setup



### 9.2 Limits of Power Spectral Density Measurement

The Maximum Power Spectral Density Measurement is 8dBm.

### 9.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3KHz RBW and 10kHz VBW, set sweep time=100s, **PK detector used**

The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span / 3KHz for a full response of the mixer in the spectrum analyzer.

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#### 9.4 Test Result

EUT		Laptop Computer	Model	LB-1017
Mode		802.11g	Input Voltage	DC 19V
Temperature		24 deg. C,	Humidity	56% RH
Channel	Channel Frequency (MHz)	Final RF Power Level in 3kHz BW (dBm)	Maximum Limit (dBm)	Pass/ Fail
1	2412	-21.80	8	Pass
6	2437	-22.65	8	Pass
11	2462	-21.29	8	Pass

Note: For 802.11g mode at final test to get the worst-case emission at 6Mbps for CH01, CH06 and CH11

EUT		Laptop Computer	Model	LB-1017
Mode		802.11b	Input Voltage	DC 19V
Temperature		24 deg. C,	Humidity	56% RH
Channel	Channel Frequency (MHz)	Final RF Power Level in 3kHz BW (dBm)	Maximum Limit (dBm)	Pass/ Fail
1	2412	-17.30	8	Pass
6	2437	-17.10	8	Pass
11	2462	-17.83	8	Pass

Note: For 802.11b mode at final test to get the worst-case emission at 11Mbps for CH01, CH06 and CH11

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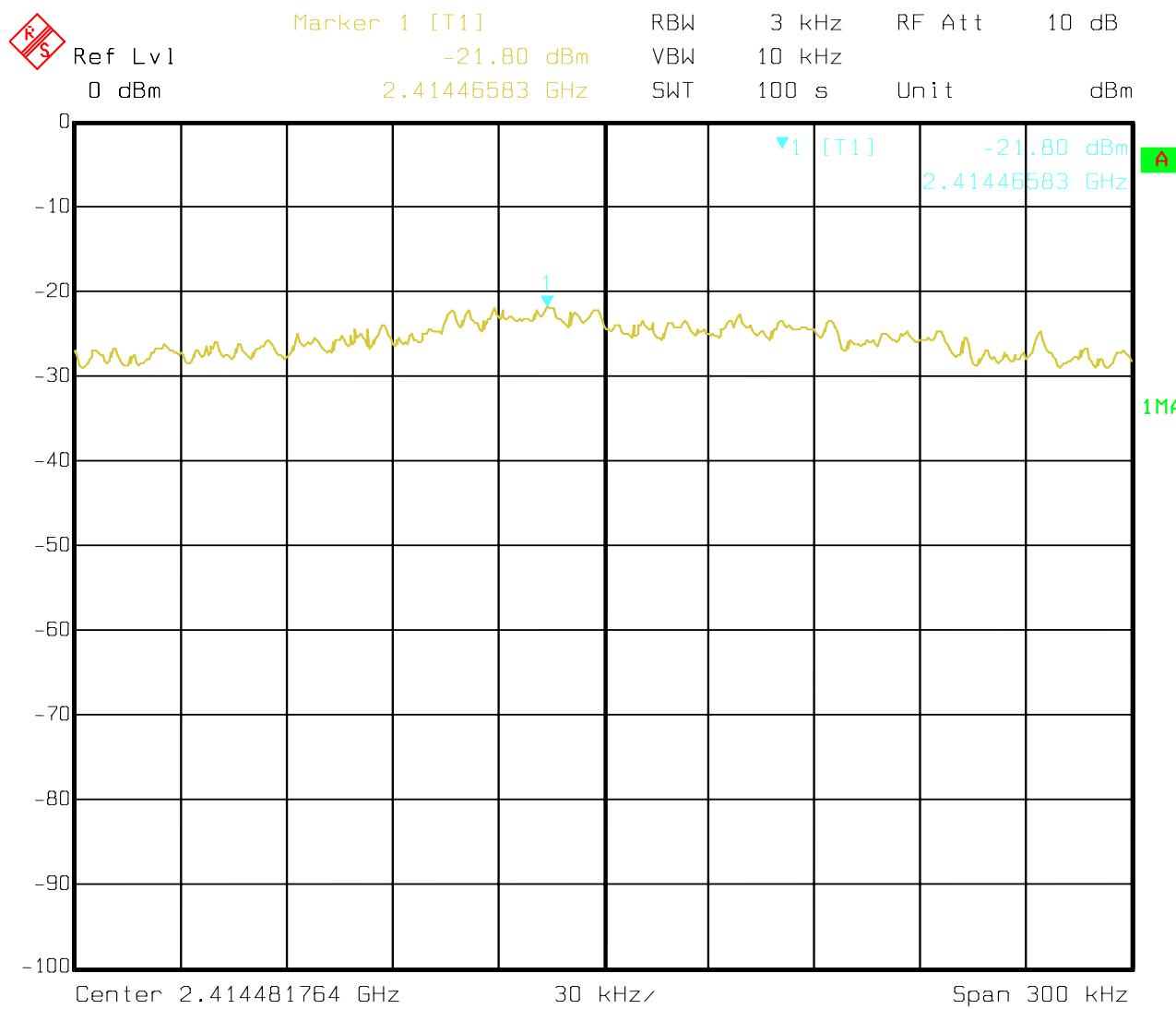
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### 9.5 Photo of Power Spectral Density Measurement

1.802.11g at 6Mbps of CH01



Date: 11.MAR.2009 12:21:04

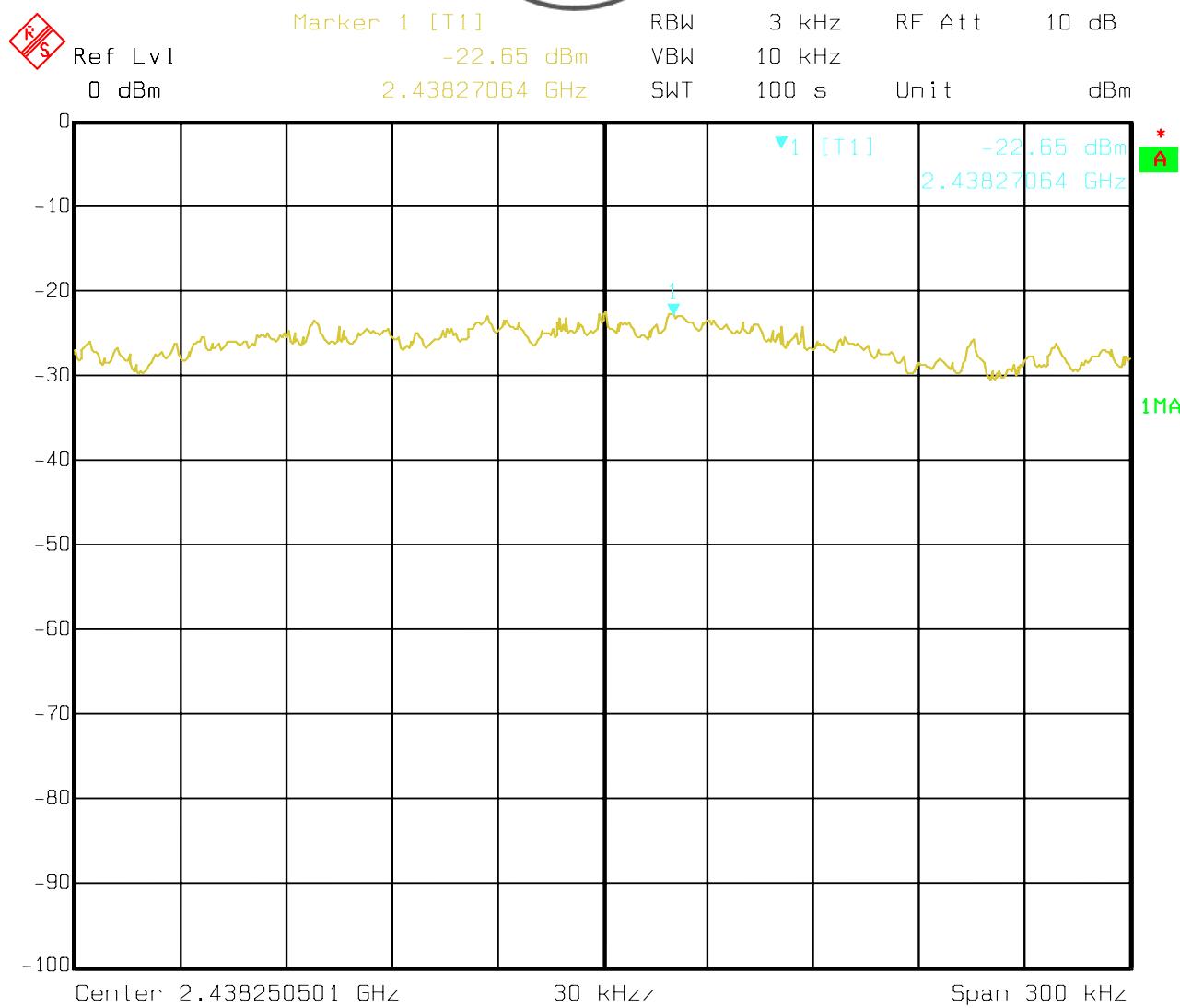
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2. 802.11g at 6Mbps at CH06



Date: 11.MAR.2009 12:25:00

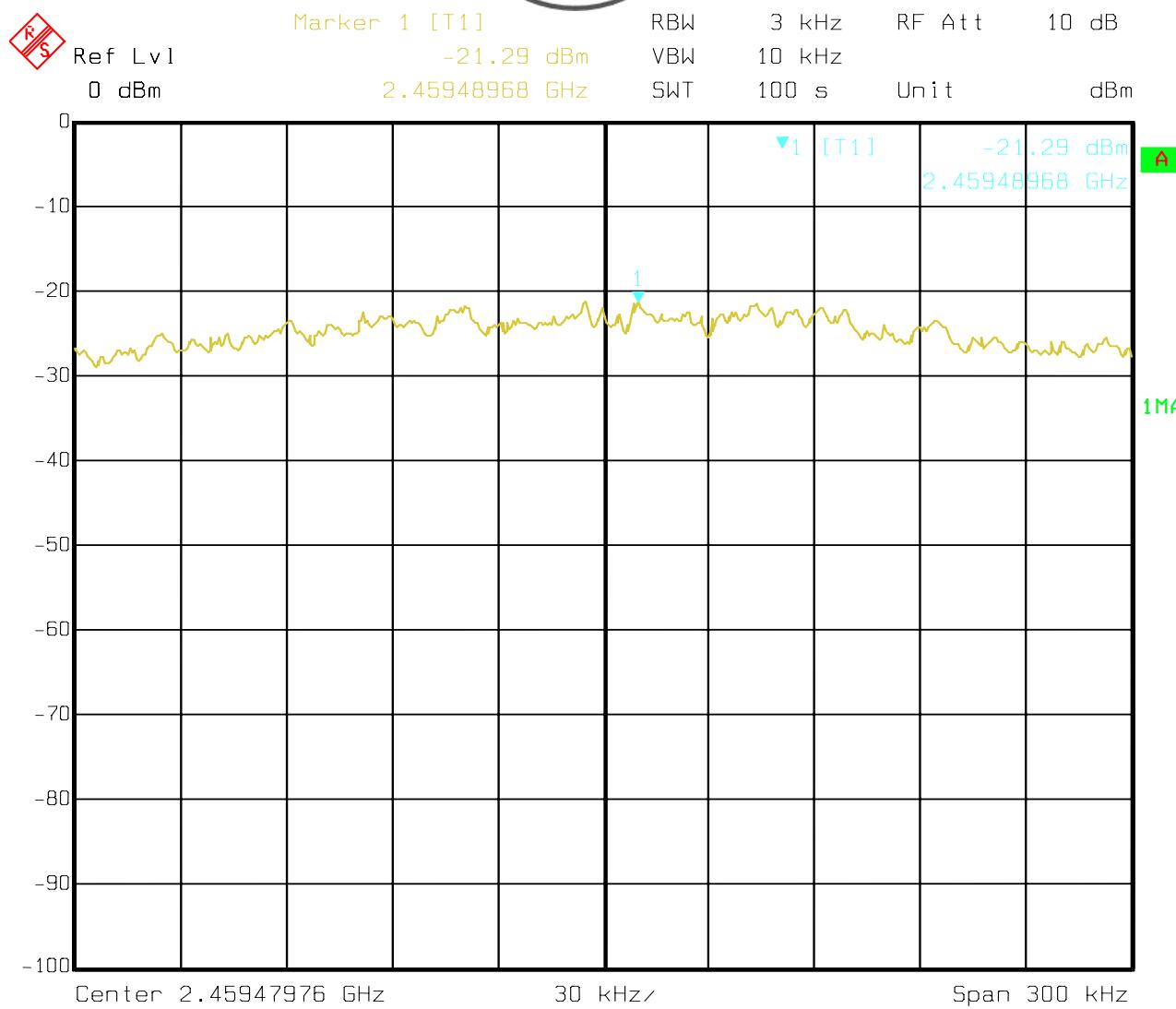
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3. 802.11g at 6Mbps of CH11



Date: 11.MAR.2009 12:29:49

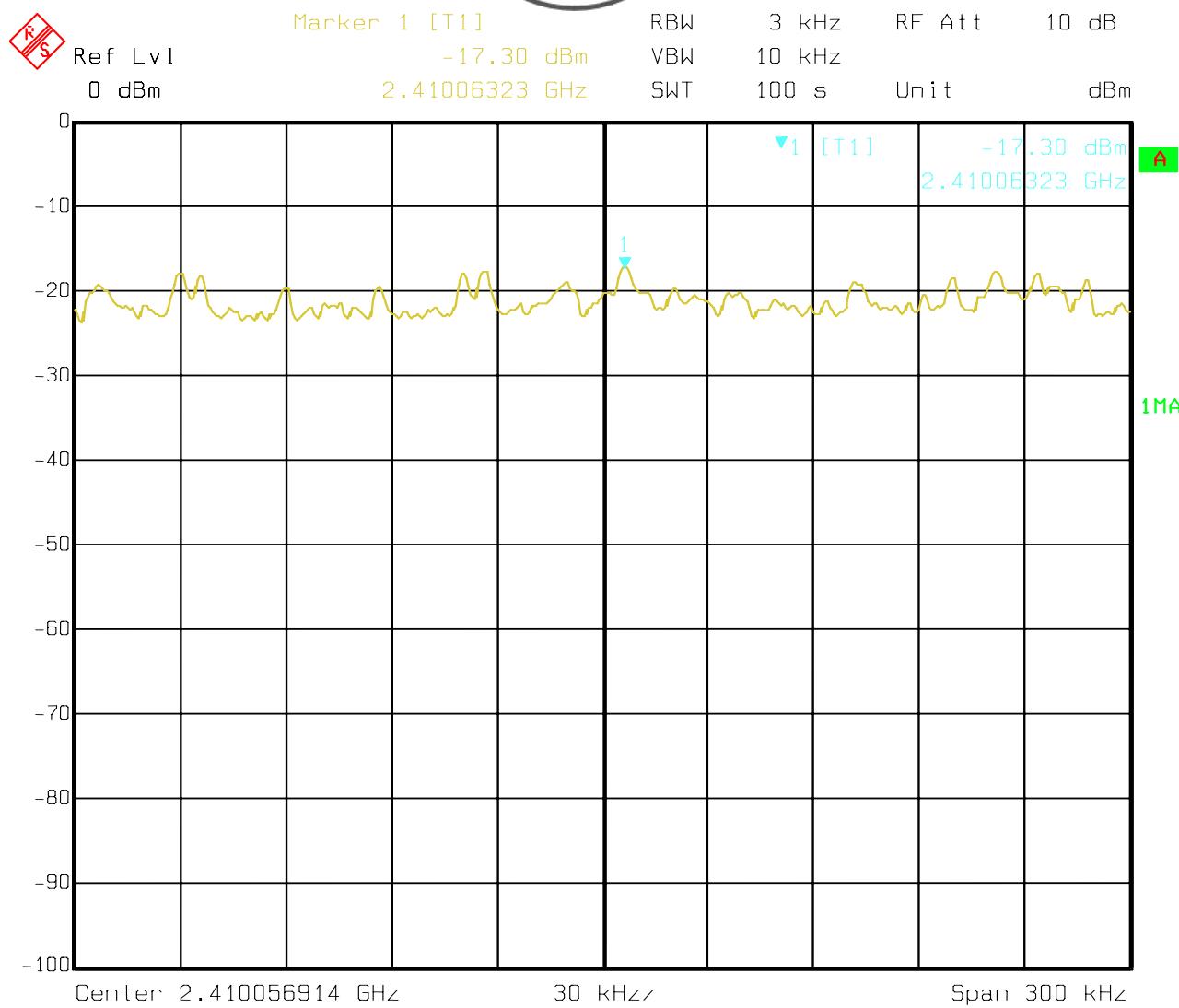
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4. 802.11b at 11Mbps of CH01



Date: 11.MAR.2009 12:47:40

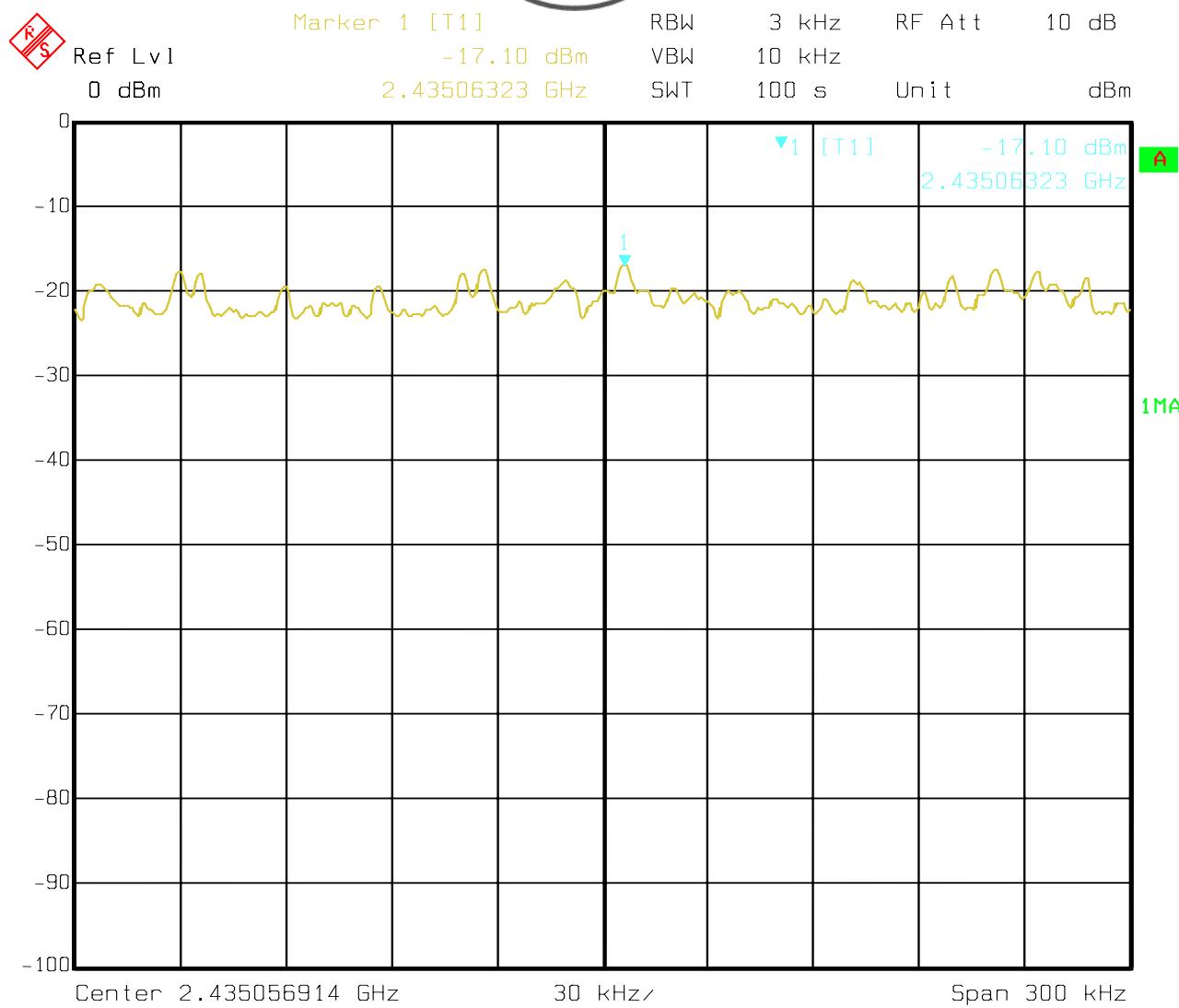
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5. 802.11b at 11Mbps of CH06



Date: 11.MAR.2009 12:52:08

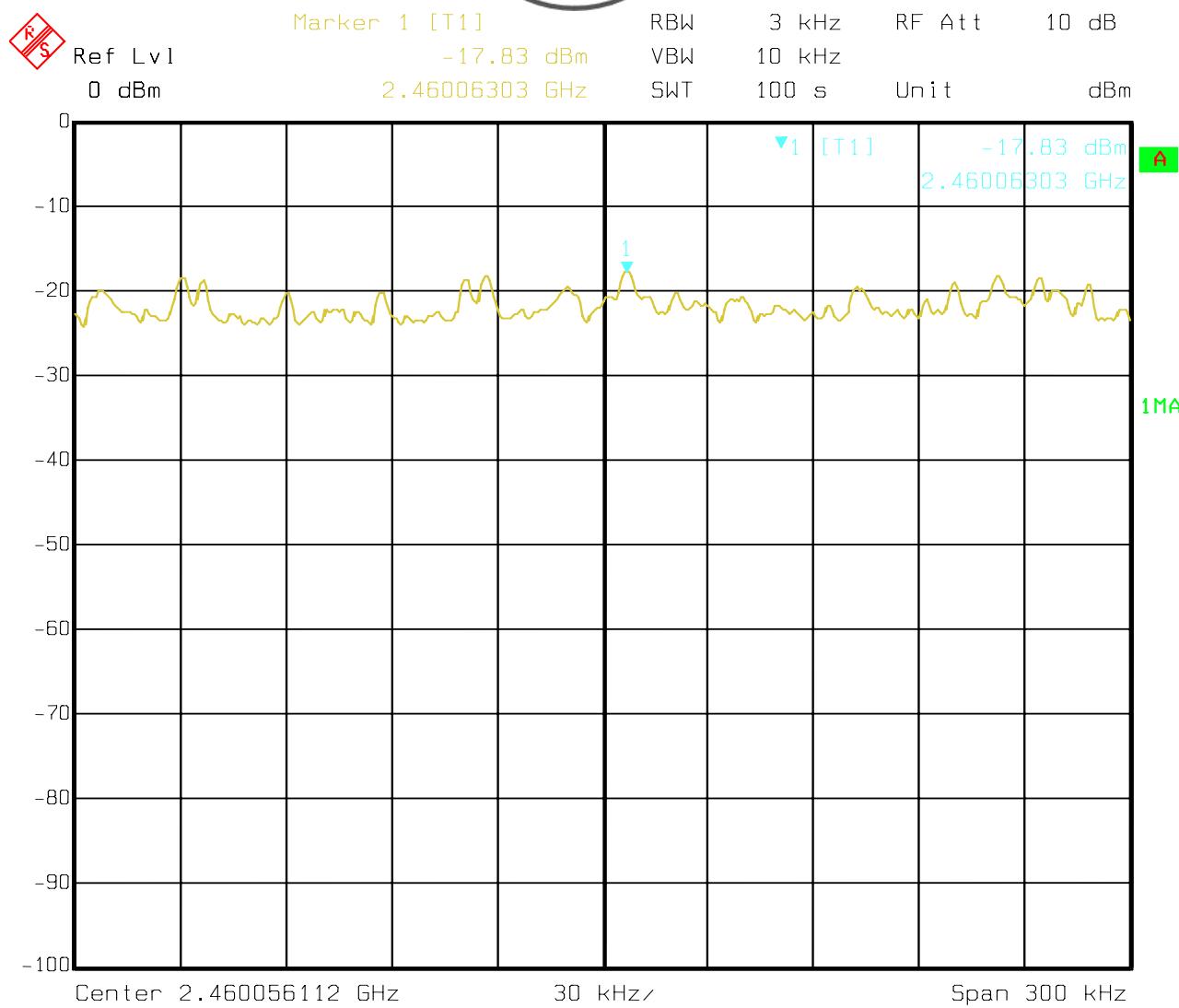
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6. 802.11b at 11Mbps of CH11



Date: 11.MAR.2009 14:34:17

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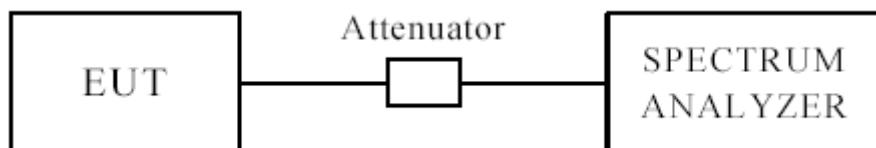
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## 10 Out of Band Measurement

### 10.1 Test Setup



### 10.2 Limits of Out of Band Emissions Measurement

1. Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

### 10.3 Test Procedure

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of radiated emission test. PK setting: RBW=VBW=1MHz; AV setting: RBW=1MHz, VBW=10Hz

For bandage test, the spectrum set as follows: RBW=VBW=100 kHz. A conducted measurement used with peak detector

### 10.4 Test Result

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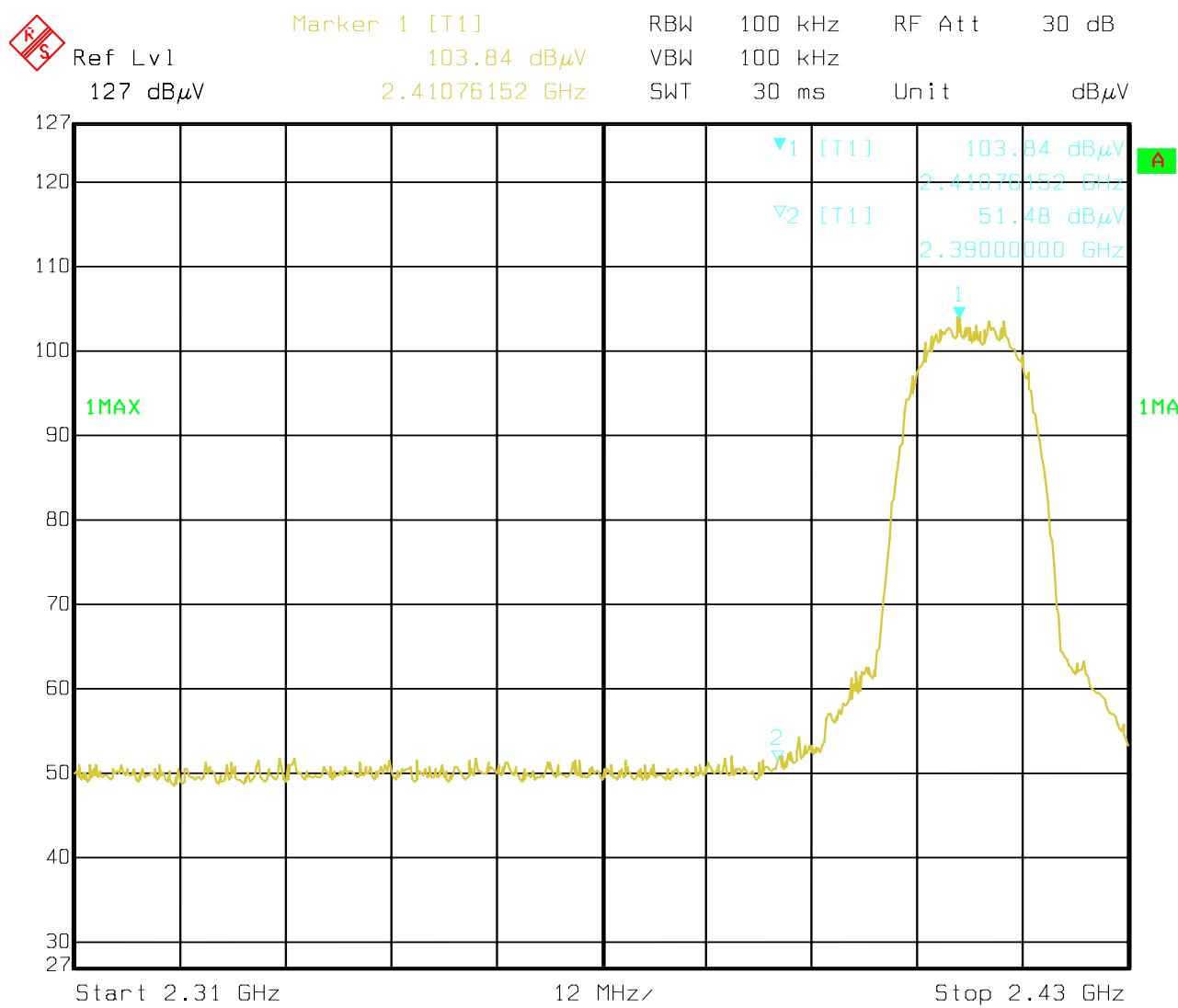
For 802.11b mode

CH01 at 11Mbps

#### 10.4 Out of Band Test Result

Product:	Laptop Computer		Test Mode:	CH1
Mode	Keeping Transmitting		Input Voltage	DC 19V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in Restrict Band	PK (dB $\mu$ V/m)	55.5(V)/54.2(H)	Limit	74(dB $\mu$ V/m)
	AV(dB $\mu$ V/m)	46.3(V)/43.8(H)		54(dB $\mu$ V/m)

#### Test Figure:



Date: 11.MAR.2009 11:21:11

**Note: The Max. FS in Restrict Band are measured in conventional method.**

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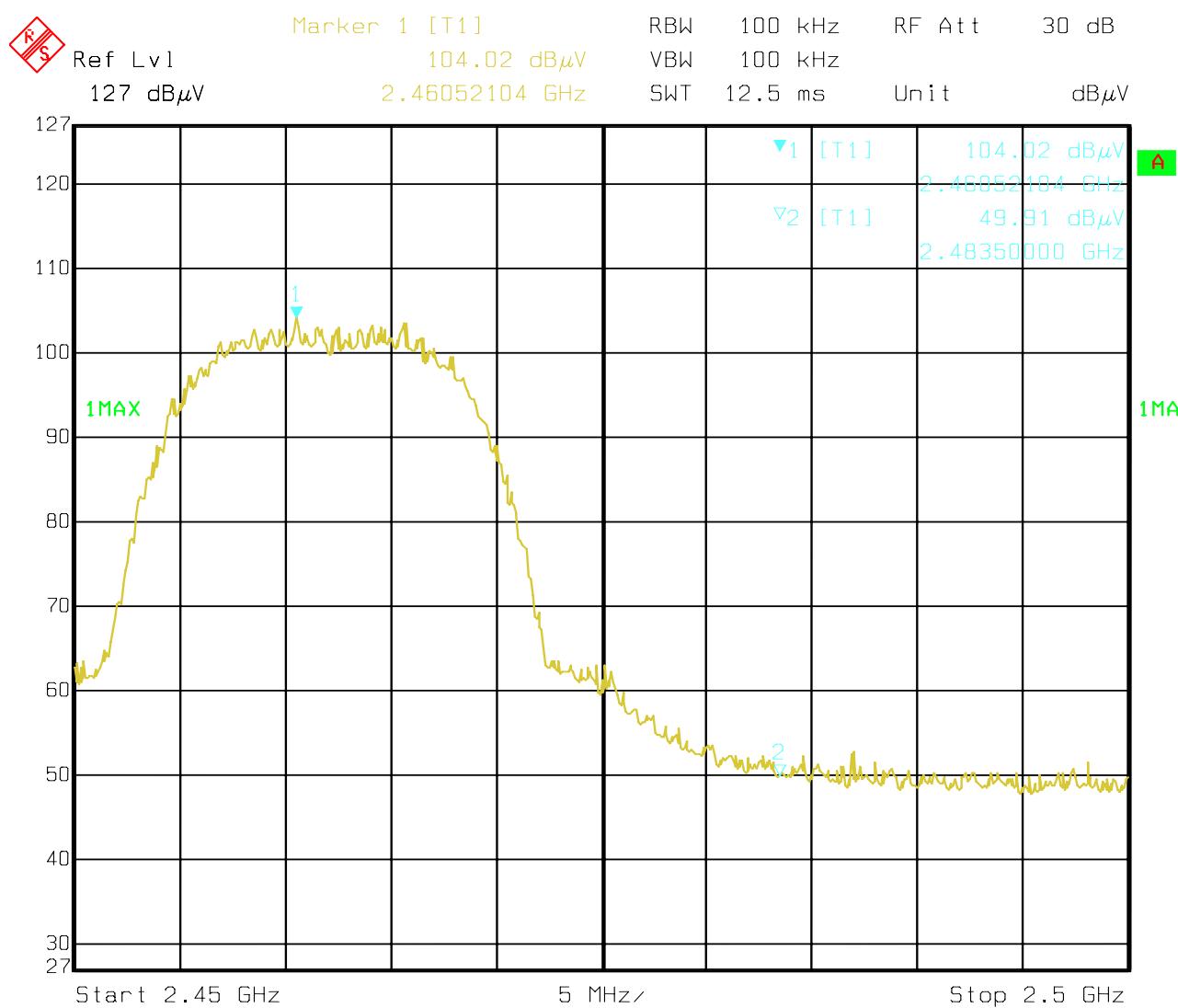
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CH11 at 11Mbps

**10.4 Out of Band Test Result**

Product:	Laptop Computer		Test Mode:	CH11
Mode	Keeping Transmitting		Input Voltage	DC 19V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in Restrict Band	PK (dB $\mu$ V/m)	55.2(V)/53.8(H)	Limit	74(dB $\mu$ V/m)
	AV(dB $\mu$ V/m)	45.1(V)/42.4(H)		54(dB $\mu$ V/m)

**Test Figure:**

Date: 11.MAR.2009 11:24:26

**Note: The Max. FS in Restrict Band are measured in conventional method.**

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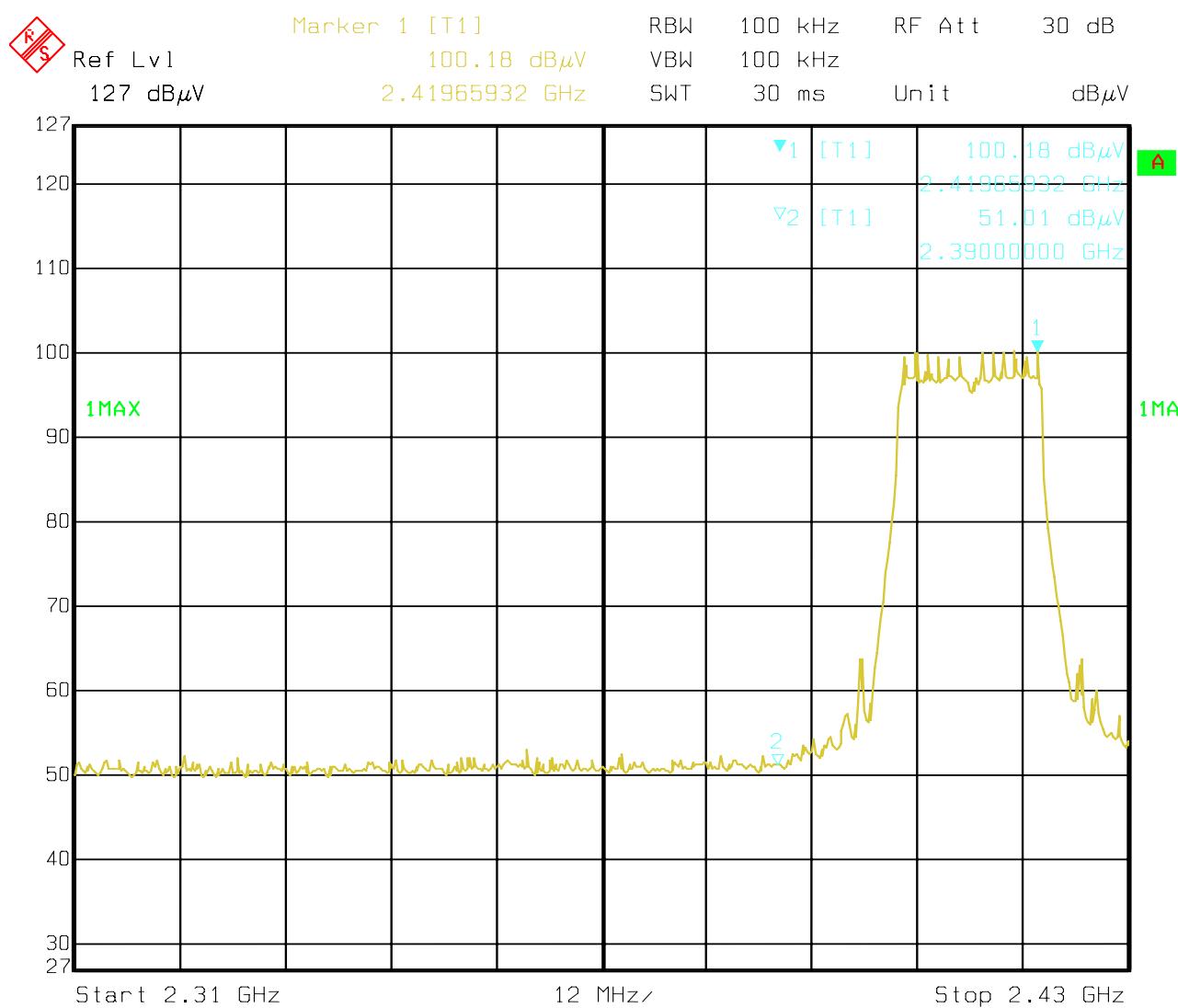
For 802.11g mode

CH01 at 6Mbps

#### 10.4 Out of Band Test Result

Product:	Laptop Computer		Test Mode:	CH1
Mode	Keeping Transmitting		Input Voltage	DC 19V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in Restrict Band	PK (dB $\mu$ V/m)	55.1(V)/52.8(H)	Limit	74(dB $\mu$ V/m)
	AV(dB $\mu$ V/m)	44.7(V)/41.7(H)		54(dB $\mu$ V/m)

#### Test Figure:



Date: 11.MAR.2009 11:10:14

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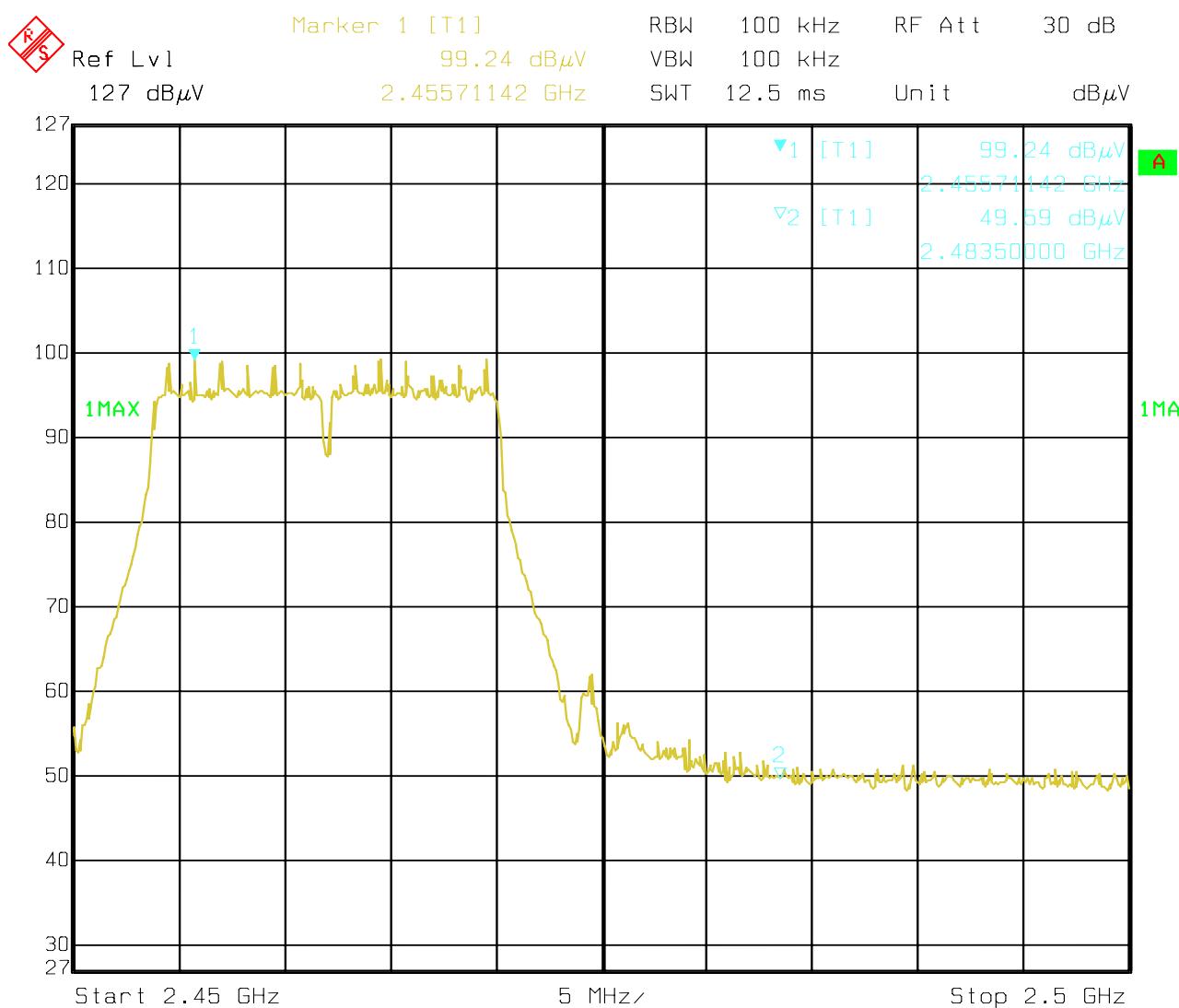


CH11 at 6Mbps

#### 10.4 Out of Band Test Result

Product:	Laptop Computer		Test Mode:	CH11
Mode	Keeping Transmitting		Input Voltage	DC 19V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in Restrict Band	PK (dB $\mu$ V/m)	52.8(H)/49.8(V)	Limit	74(dB $\mu$ V/m)
	AV(dB $\mu$ V/m)	40.5(H)/38.3(V)		54(dB $\mu$ V/m)

#### Test Figure:



Date: 11.MAR.2009 11:14:27

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## 11.0 Antenna Requirement

### 11.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the mount in dB that the directional gain of the antenna exceeds 6 dBi.

### 11.2 Antenna Connected construction

There are two antennas used in the device. An RF cable connected the IPX connector with the antenna board. The maximum Gain of both antennas is 1.70dBi.

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## 12.0 Maximum Permissible Exposure

### Applicable Standard

According to §1.1307(b)(5), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Portable device. **KDB616217 was used as the guidance.**

According to §1.1310 and §2.1093 RF exposure is calculated.

### Measurement Result

This is a laptop and the conducted output power is 13.10dBm (20.417mW), which is lower than low threshold 60/fGHz mW (60/2.462GHz= 24.37 mW), and the antenna is 1.7dBi which is less than 6dBi.

**The SAR measurement is not necessary.**

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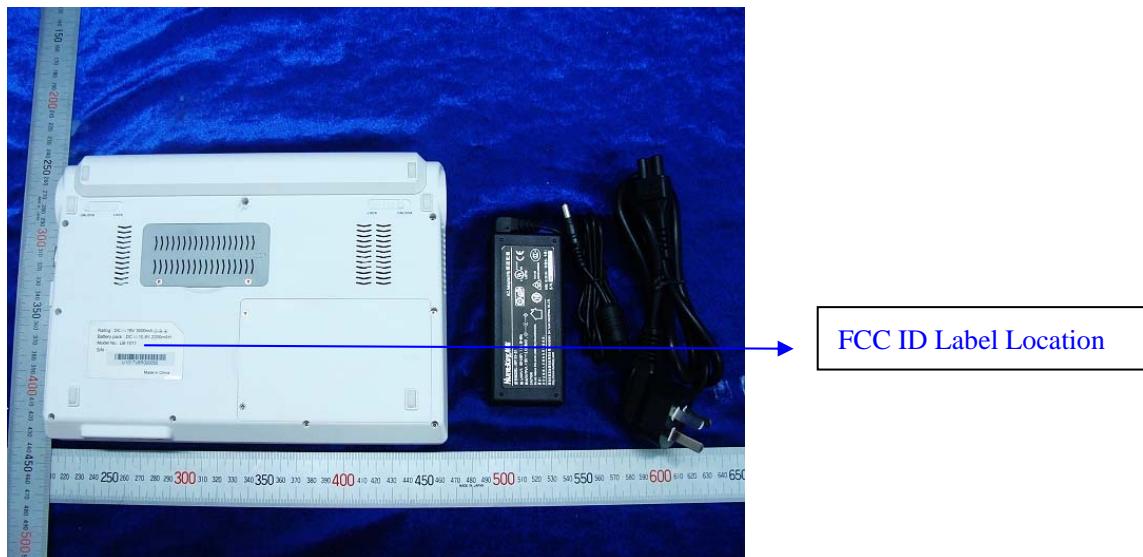
### 13.0 FCC ID Label

FCC ID: W7TUS

**This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.**

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

#### Mark Location:



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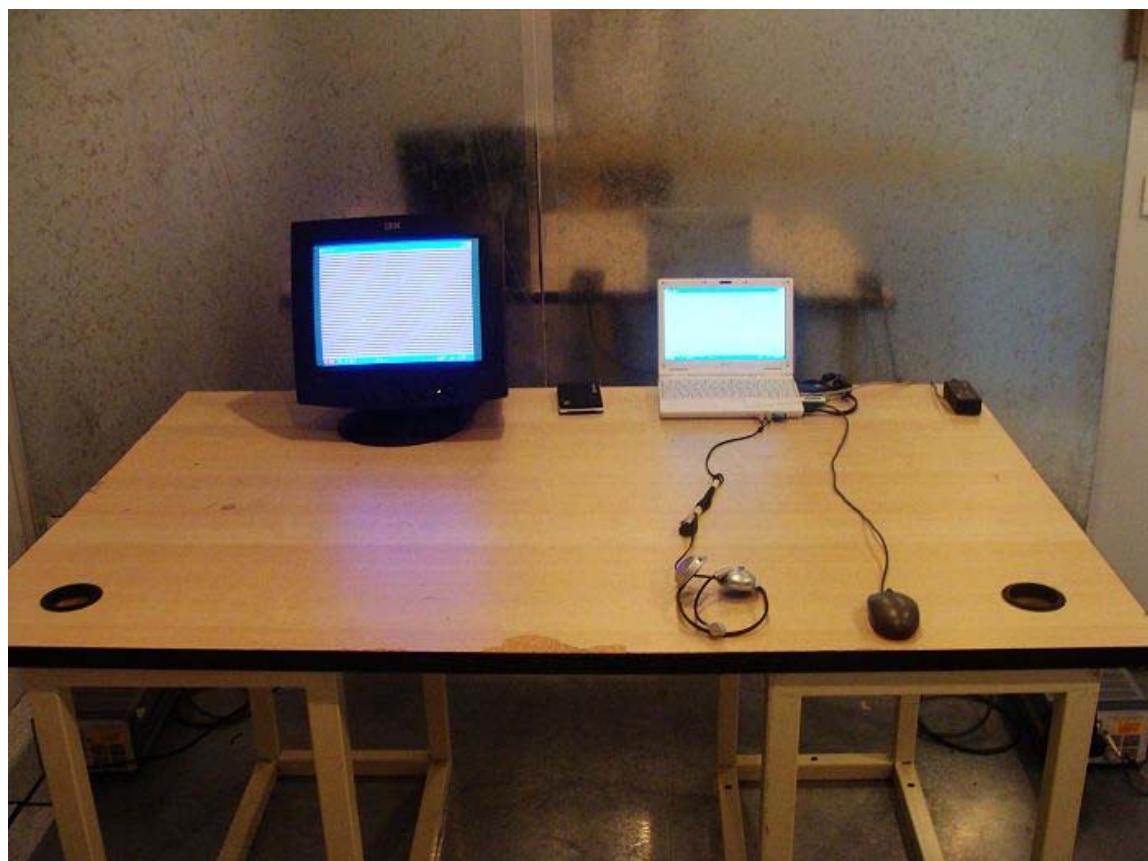
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#### 14.0 Photo of testing

14.1 Conducted test View--



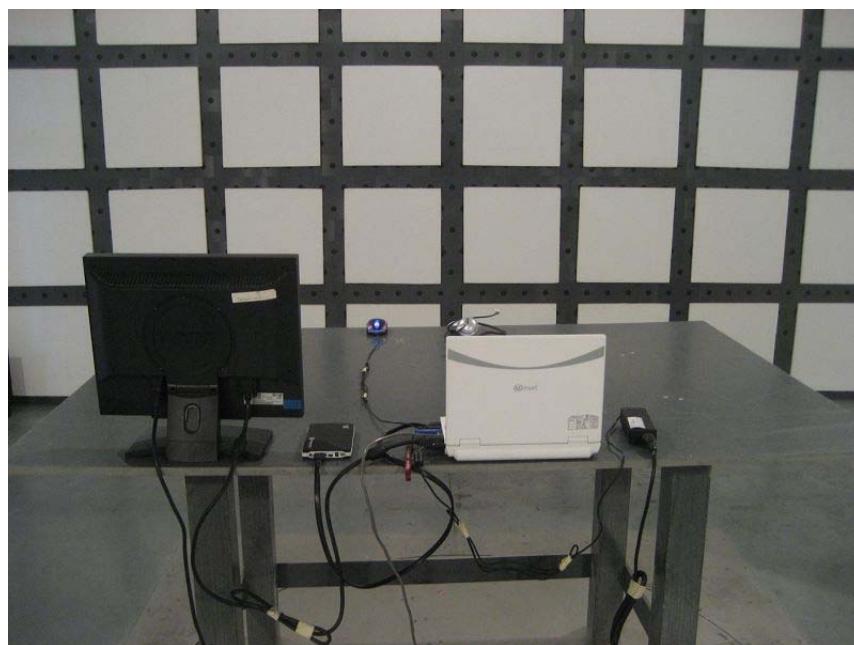
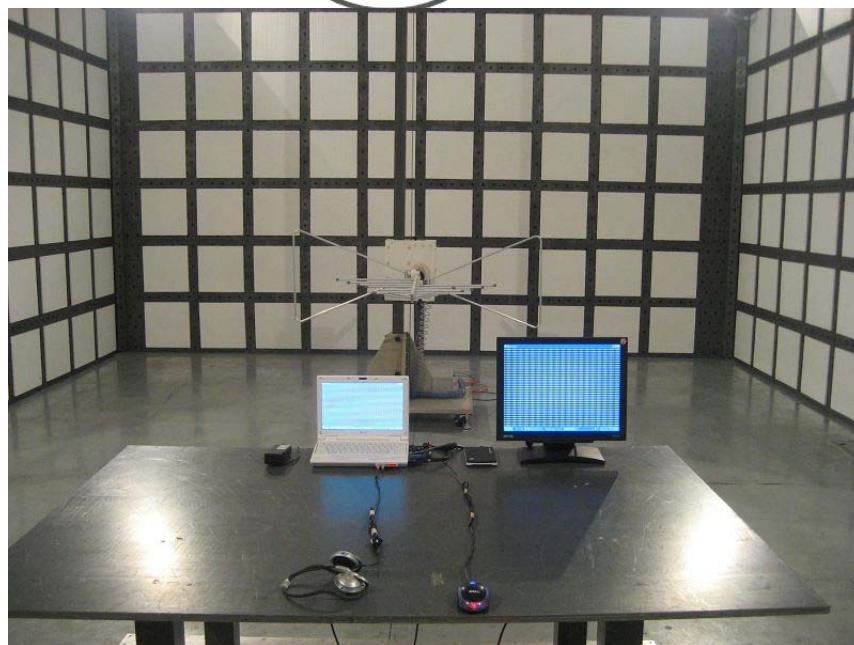
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14.1 Emission Radiated test View--



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14.3 Photo for the EUT

Outside View



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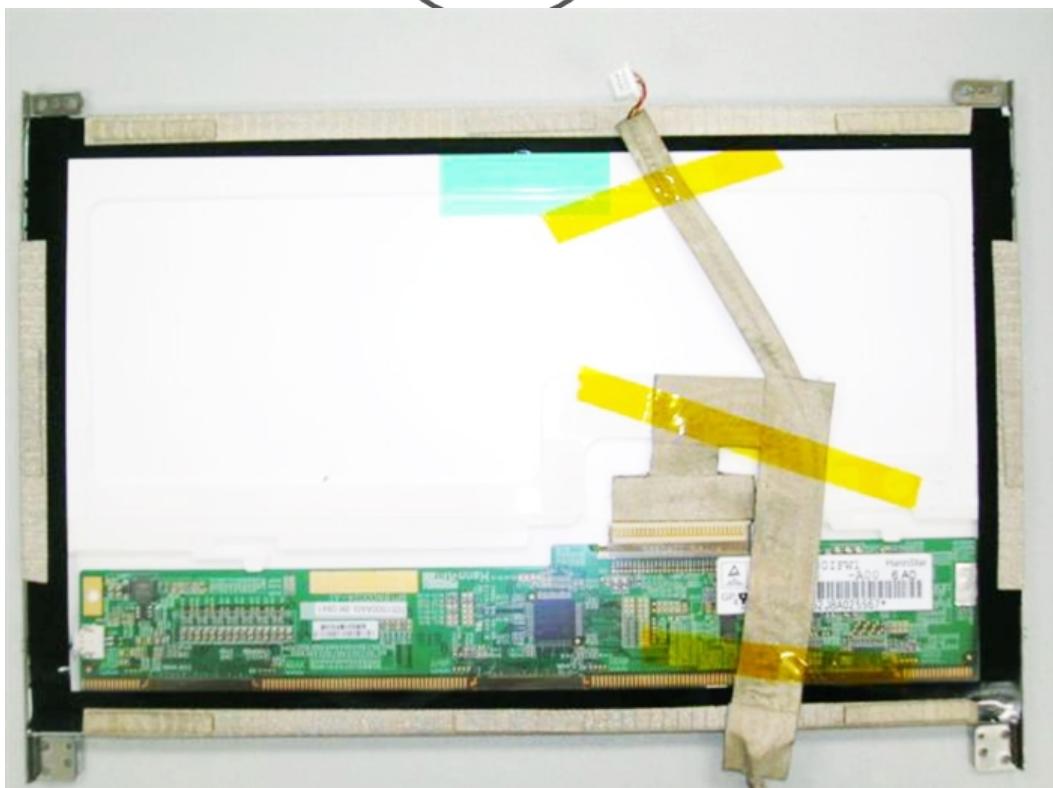
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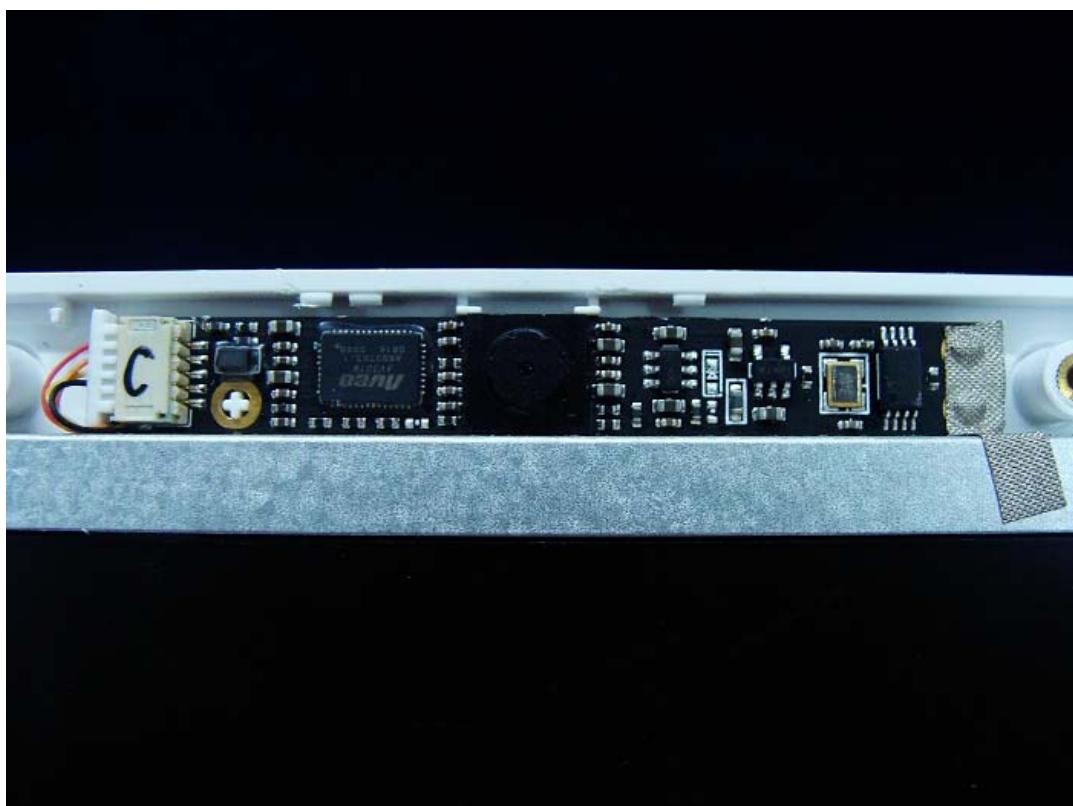
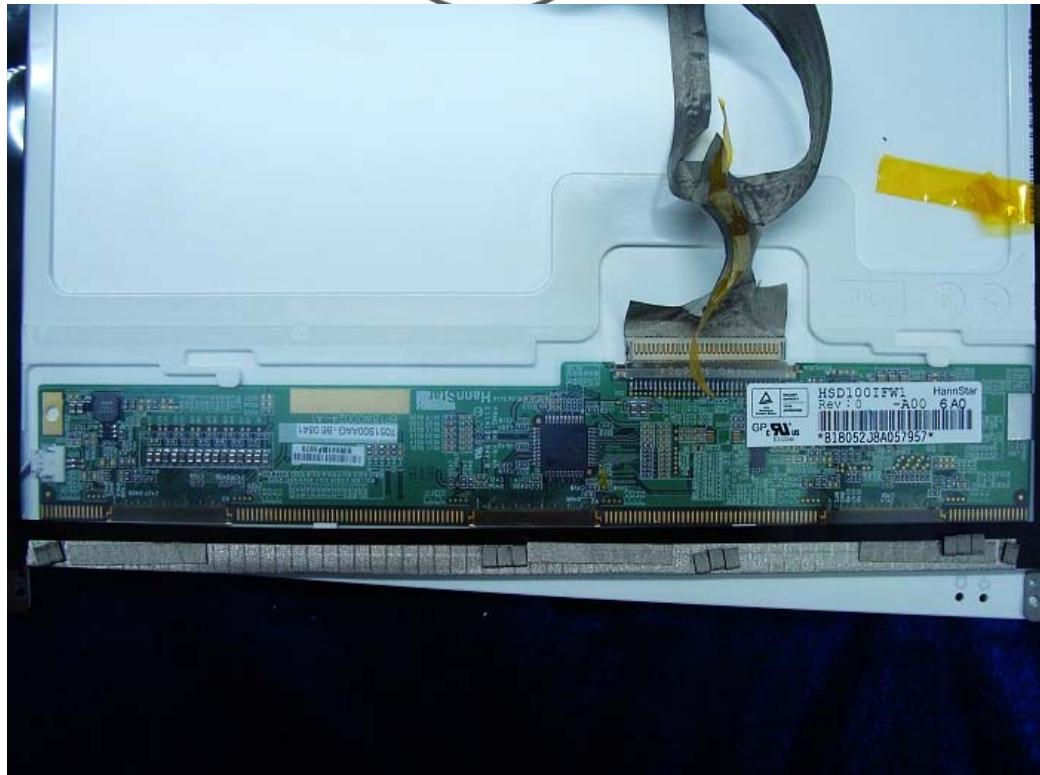
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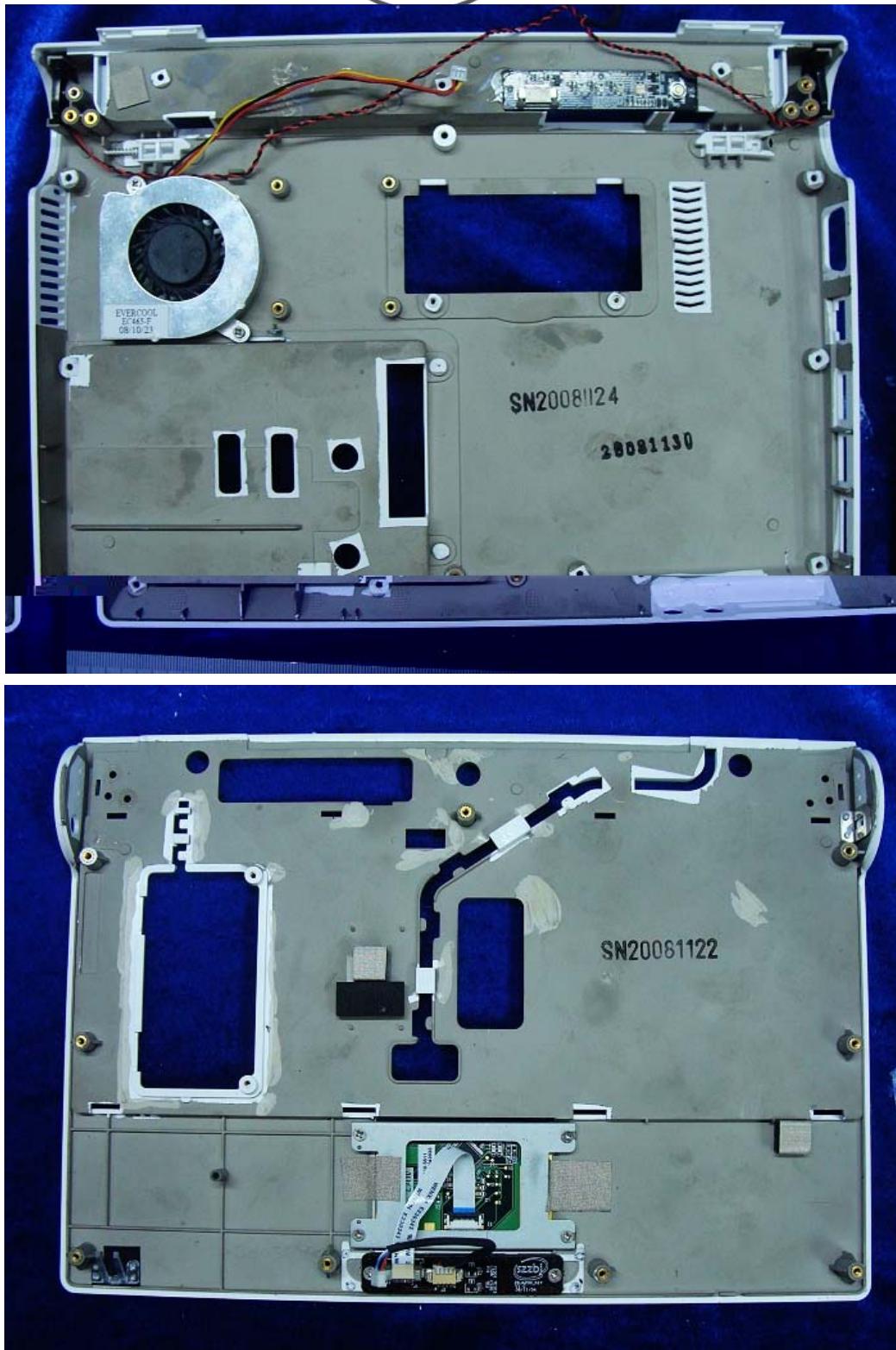
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Interior View



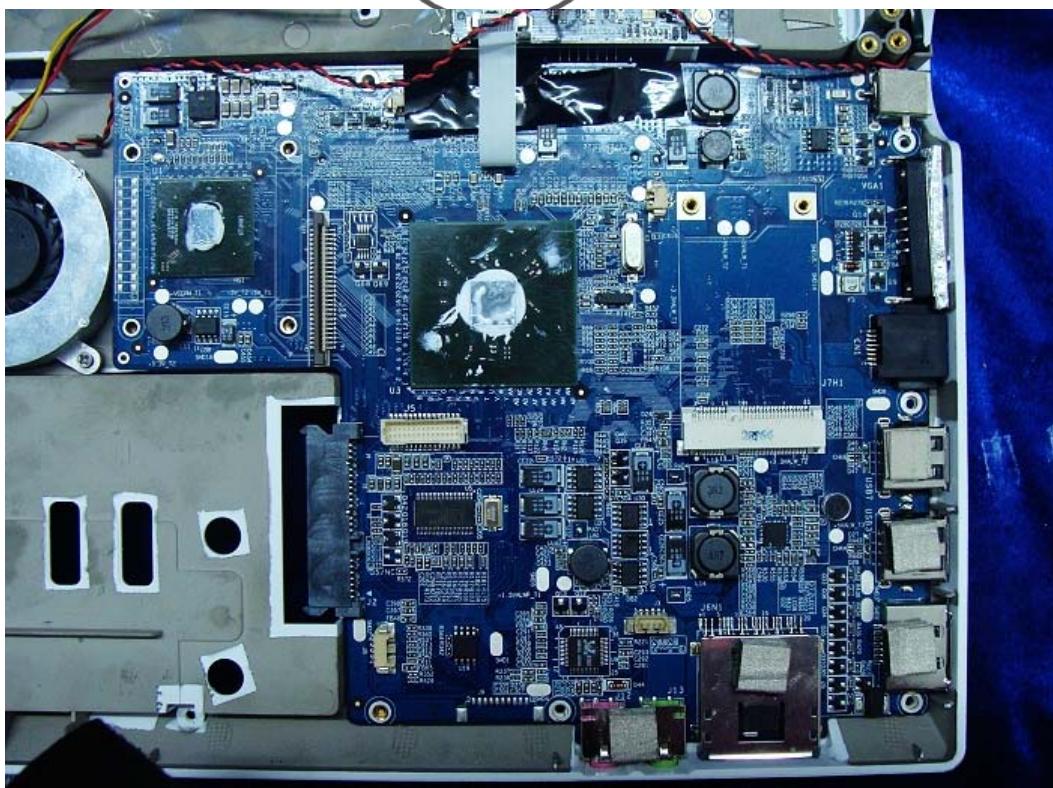
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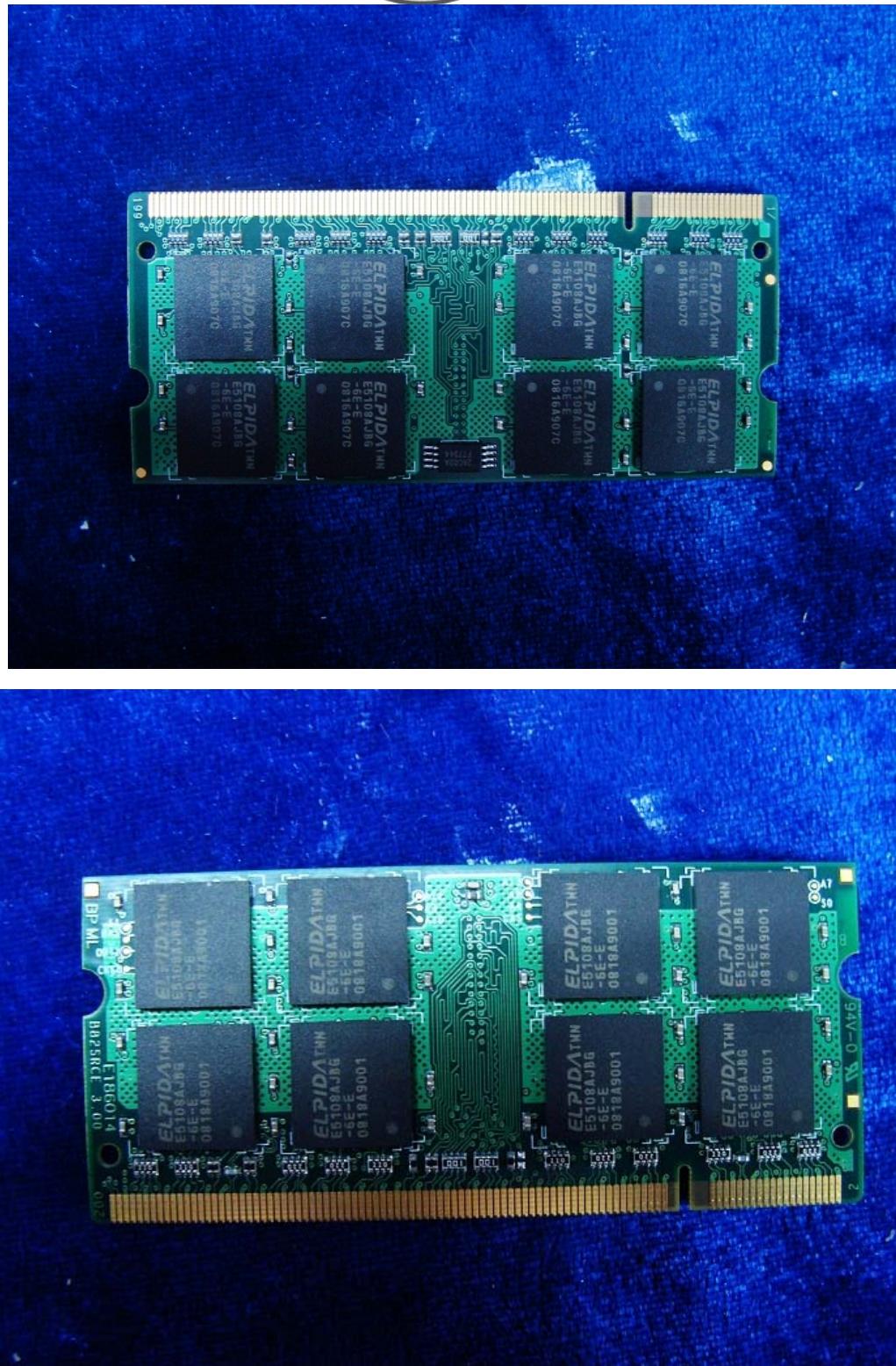
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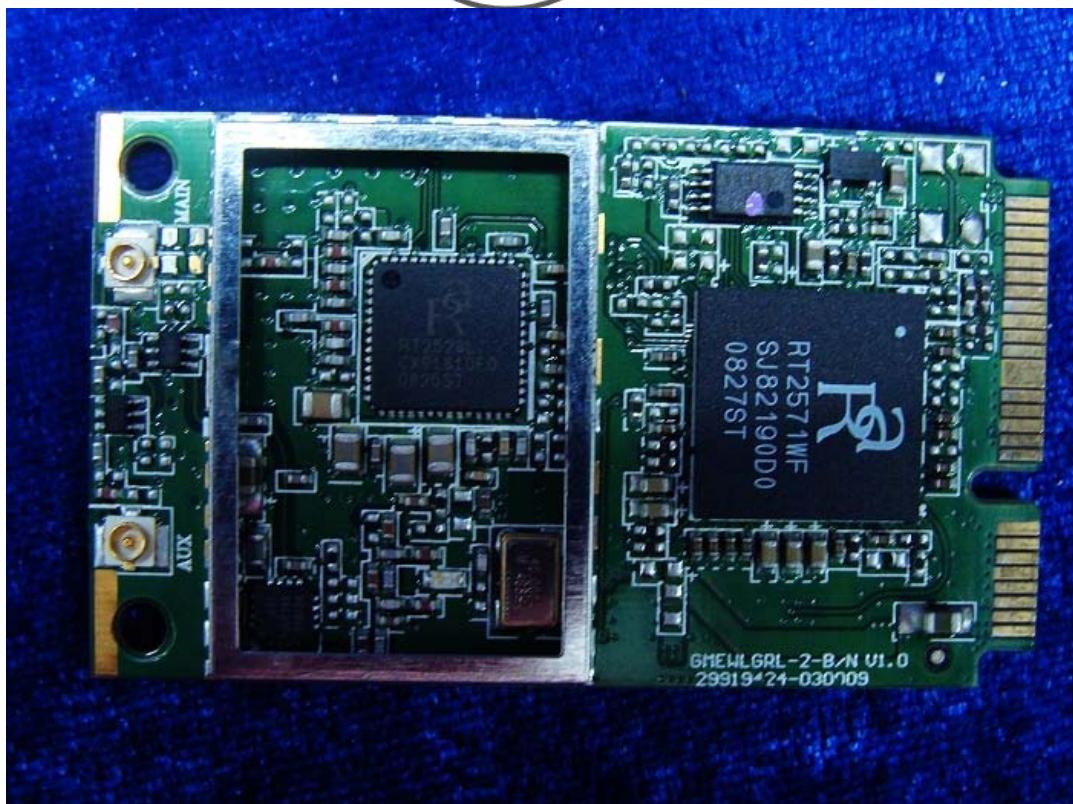
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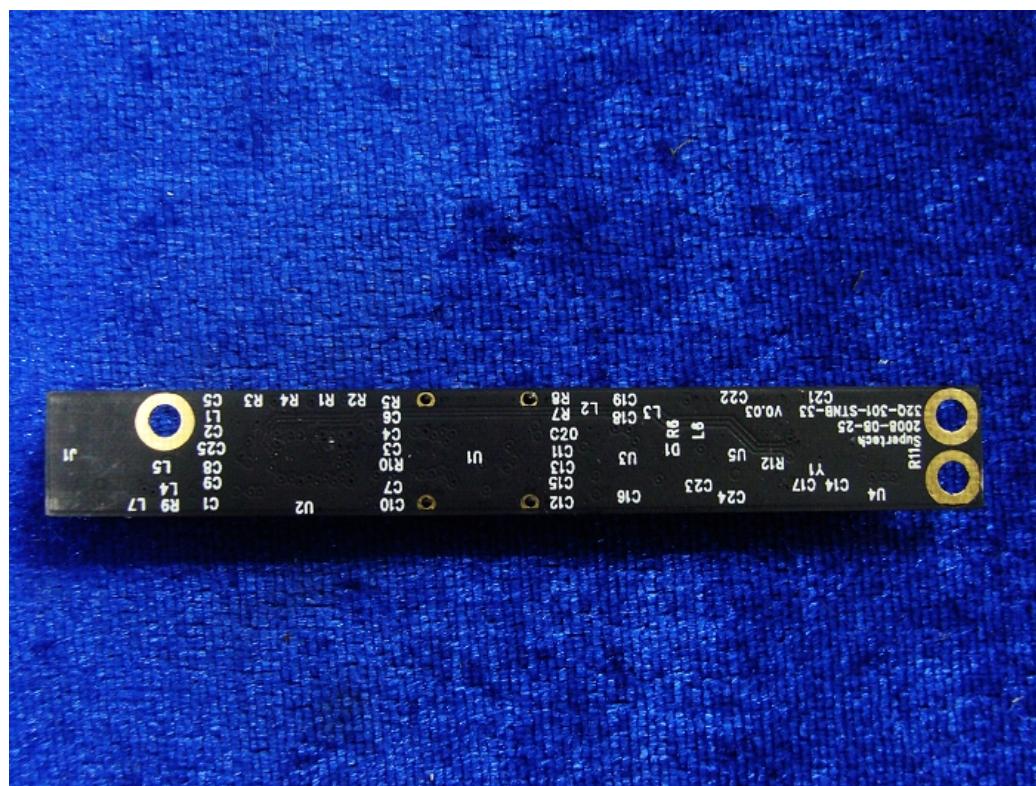
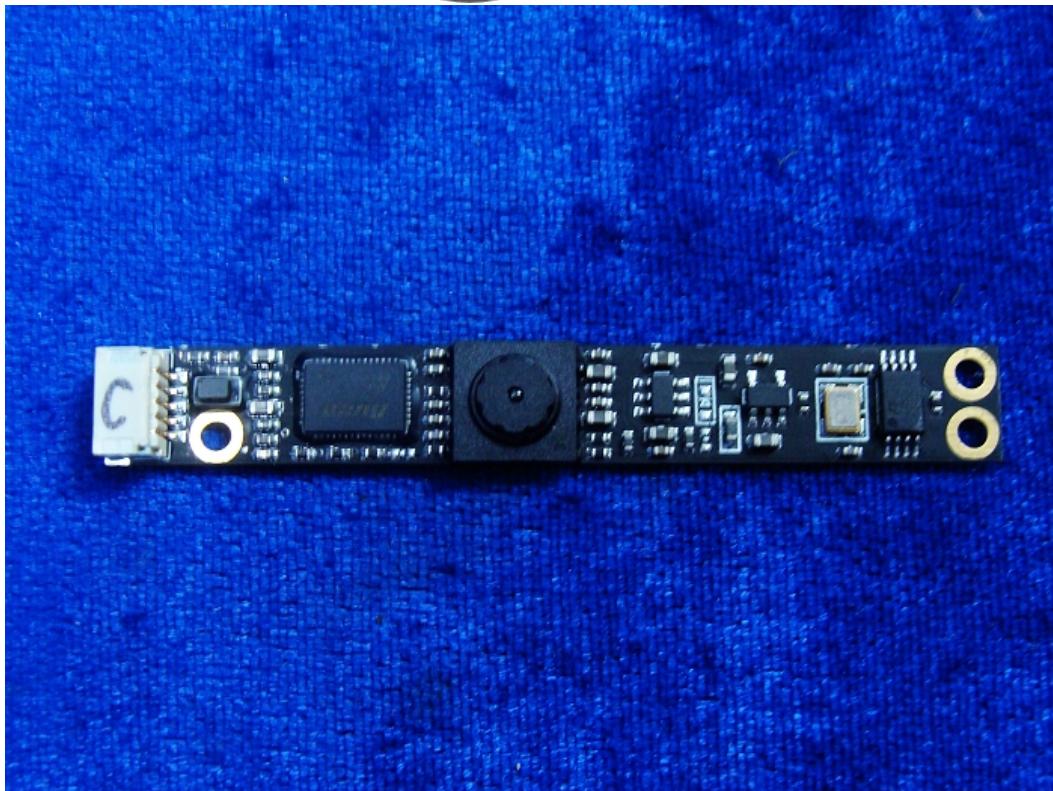
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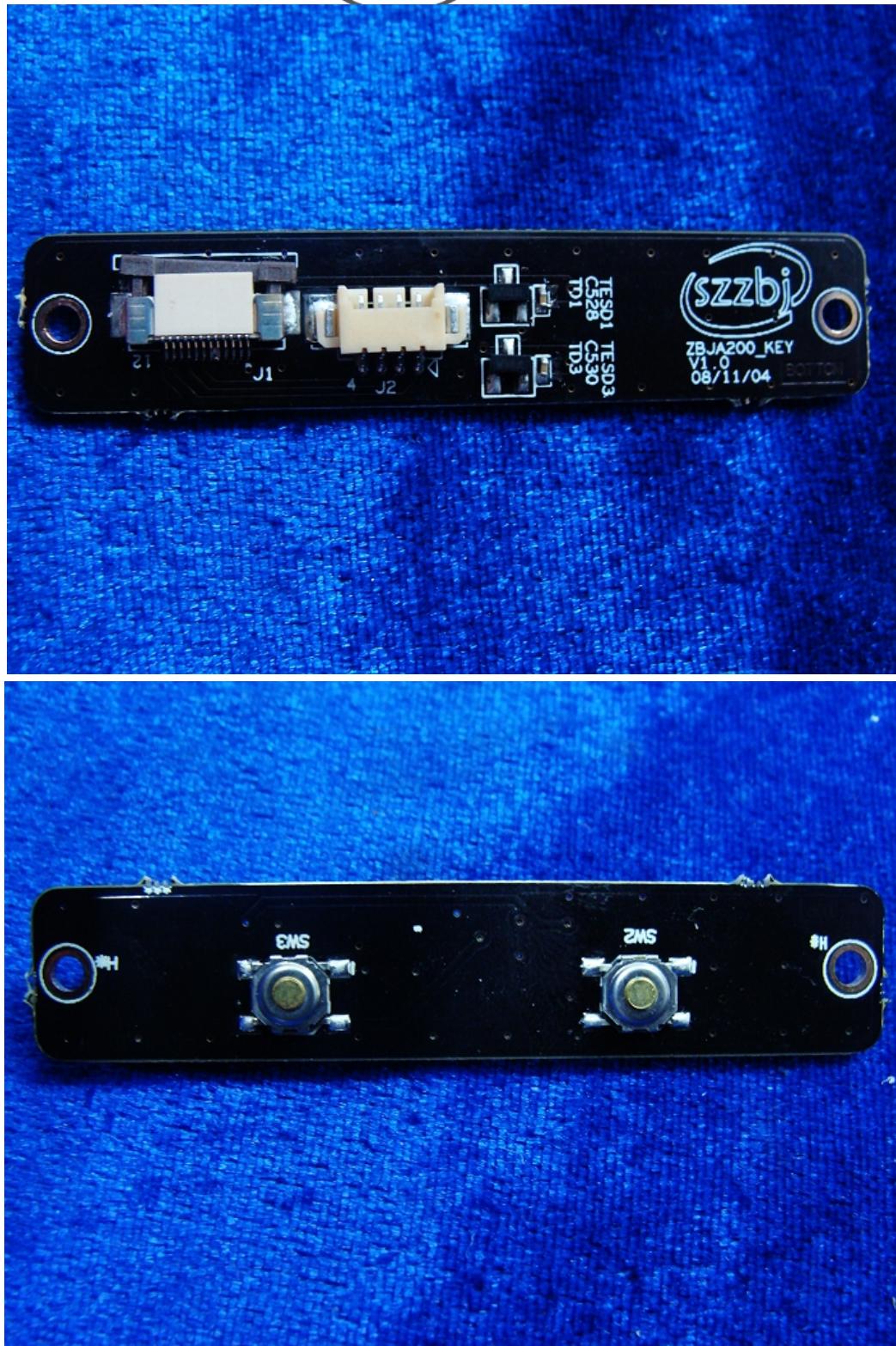
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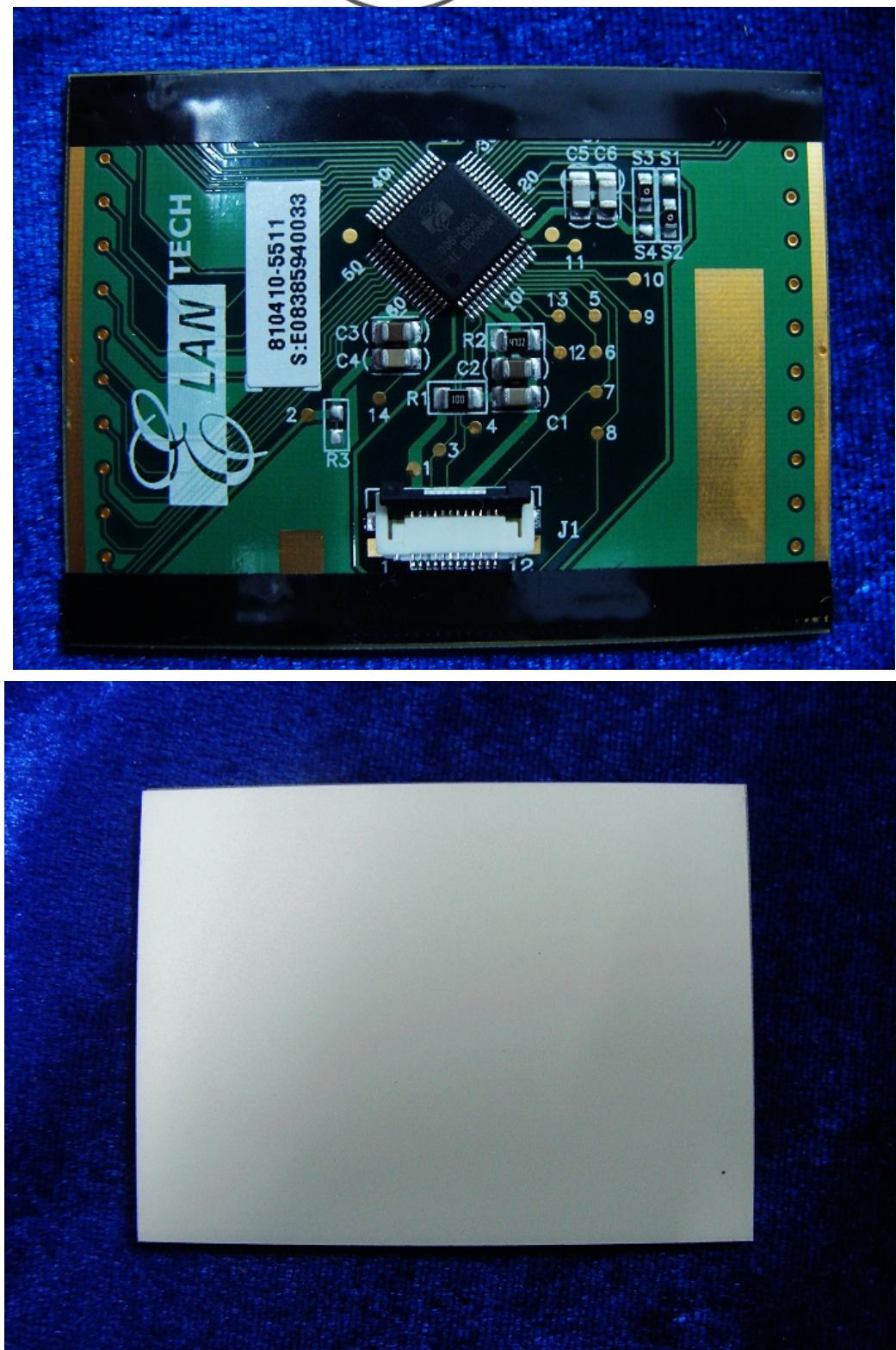
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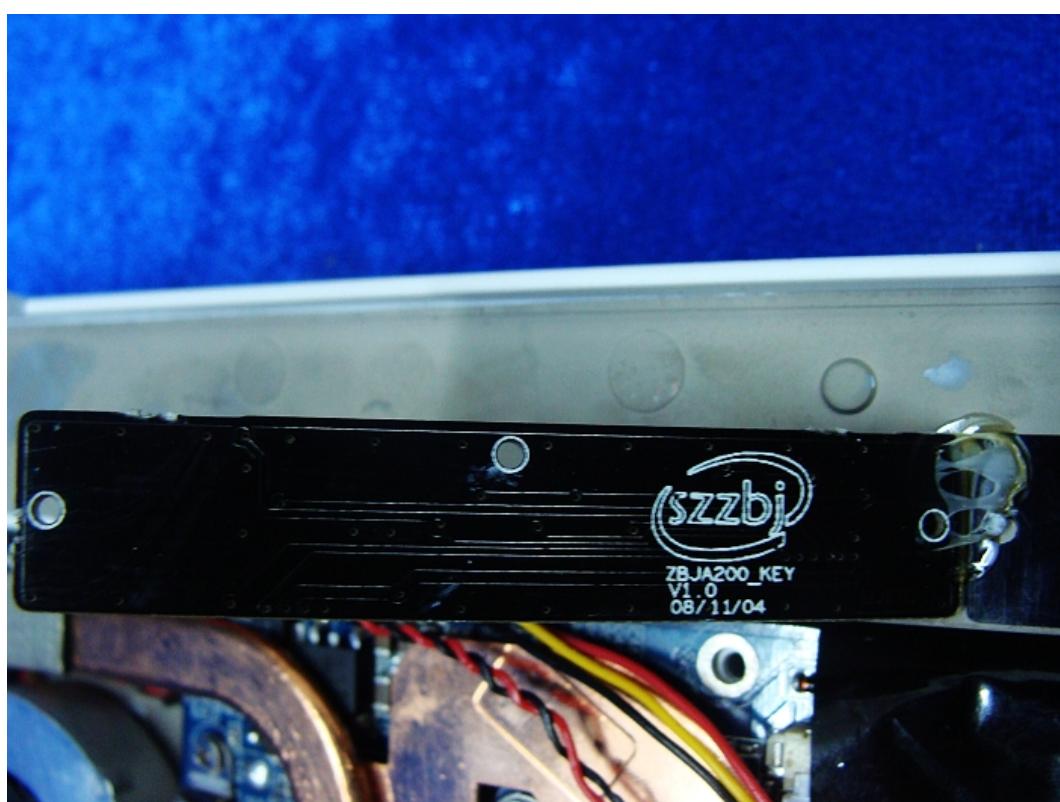
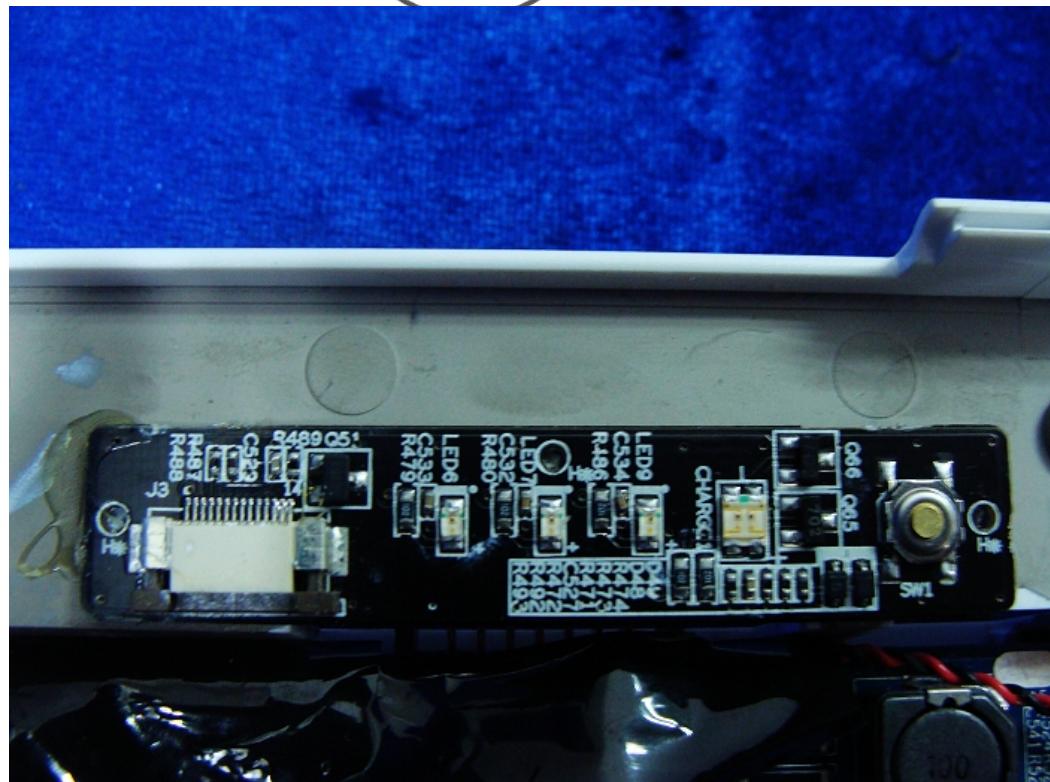
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Adaptor model No: ADP193-32



Adaptor model No: YJS05-1903000D



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